ACCESSIBILITY TO PRIMARY MEDICAL CARE IN CHILE

BY

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To my sister Josette Marie, who through example taught her brothers and sister to help the less fortunate. And to my father Joseph, who showed me at a very young age the many worlds of geography.

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Only I, of course, am responsible for the contents of this work.

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Traditional health policy in Chile has changed under the neoclassical development model of the current regime. Social services have been reduced and the legal framework has been restructured to facilitate more private medical care. This study analyzes the effect of these policy changes on the economic, cultural and organizational, and spatial aspects of medical care accessibility.

Policy outcomes have produced more out-of-pocket payments, increased the monthly wage withholdings for health care and the cost of public medical vouchers issued by the National Health Fund (FONASA), and reduced the public medical-personnel-to-population ratio. Financial statements

from the National Health Service System (S.N.S.S.) are reviewed from 1962 to 1983 as one indicator of these policies. Medical consumers' purchasing power fell by 20 percent between 1978 and 1983. Possible reasons for the failure of medical practices (ISAPREs) to capture the originally predicted market share are discussed.

Demographic and organizational models examined utilization and satisfaction with care among a survey of 140 S.N.S.S. users in southeastern Santiago. Users were satisfied with medical care despite long waiting periods and conflict with ancillary workers. Survey findings suggest that S.N.S.S. users expect a minimum level of medical care. Comparison with national and international studies reveals the importance of physicians' bedside manner and proximity to medical care.

The spatial organization of primary medical care is analyzed in Greater Santiago and this pattern is compared with those from Canada and the U. S. Mapped accessibility surfaces to S.N.S.S. clinics (for the medically indigent) reveal under-serviced areas in the low-income and newly settled municipalities in the south. Private physicians were spatially more concentrated in 1980 than in 1950, suggesting that the private medical market in Chile, like Canada, is not acting as an agent of dispersion.

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INTRODUCTION

Background

Public service provision is one indication of the state's role in social and economic development. The mixture of public and private funds in the provision of services varies widely in time and space yet invariably reflects the political tendencies of an administration and the current ideologies of the state. Federal programs in the United States, for instance, are being cut back or eliminated in the 1980s under the Reagan administration, reflecting an ideology of less government involvement in individuals' lives. An important catalyst to the redefinition of government spending was the so-called Jarvis Amendment which appeared before the electorate in California in 1978. This amendment, often referred to as Proposition 13, lowered the ad valorem real property taxes from three to one percent. The State of California lost about seven billion dollars in foregone revenues, but afforded taxpayers that much in savings. Proponents of the amendment, state legislators H.A. Jarvis and P. Gann, argued that lower taxes can reduce the level of public-sector programs and services. Jarvis claimed that

> the only way to cut the cost of government is not to give them money in the first place. (F.C.F, 1978, p. 425)

Co-sponsor Gann added

> The government has tried to become uncle, mother and father and we simply cannot afford it anymore. (F.C.F., 1978, 425)

Other proposals and amendments that were against high taxes and wanton government spending appeared on the ballots in 14 other states that November. The tenet of this legislation, and indeed its appeal to the electorate, was that local, state and national governments could provide a minimum level of public programs and services without compromising the welfare of the general public.

Fiscal retrenchment has also become evident among other industrial nations, albeit for different reasons. The governments of Helmut Kohl of West Germany and Margaret Thatcher of Great Britain have shared a similar restrictive government ideology. This shift towards fiscal retrenchment in Western Europe conflicts with a long-established tradition of state participation in the economy and especially in human service programs. Economic summit meetings of the recent leaders of the industrial nations have subscribed to fiscal conservatism to the extent that it can curtail inflation. The performance of the United States' economy during the first term of Ronald Reagan as well as the resounding approval given him by the electorate in November, 1984, suggests that governments can and should

provide fewer community services if private sector and individual initiatives can deliver such services.

To some extent, this general fiscal retrenchment policy can be seen as a backlash to the growing tide of liberalism of the post-World War II era. Adherents to the "less-government-is-better" notion in the U.S. have contended that the return on human investment projects in, say, health care, is both difficult to measure and does not yield commensurate returns. Individual responsibility is of primary importance in establishing one's health status. Clearly, in the U.S. it seems that individual life-styles determine, in large degree, the health status that one enjoys (Dever, 1980). Indeed, increasing public funds in the health care sector in the form of national insurance or program coverage is not an adequate substitute for what individual initiative can provide. Though this health care example is simple, it does underscore a basic premise of fiscal retrenchment: less government spending coupled with individual and private business initiatives is better than, or perhaps equal to, state-financed ventures.

This current trend against the growth of the state and increased social spending is also evident among developing nations. The 1970 Chilean presidential elections produced a socialist victor, Dr. Salvador Allende, whose Popular Unity party sought to further state control of the economy that had steadily mounted during the 1960s. The Allende

government increased public-sector investment in the areas of mining, metal processing, transportation, health and education that the previous administration of Christian Democrat Eduardo Frei (1964-70) had initiated. But for reasons not to be considered by this present study, the Allende government was overthrown in September 1973 by the armed forces led by General Augusto Pinochet (Sigmund, 1977). Supporters of the coup claimed that the Allende administration (1970-73) wreaked havoc on the nation. They objected to high unemployment, soaring inflation, rampant labor strikes, work stoppages, and land and business expropriations that were seen as the preparation for the establishment of a socialist state.

Since 1973, Chile has been ruled by General Pinochet whose self-appointed term in office is to expire in 1989, with an option to continue until 1996. The military government has forged strong ties with new and traditional business groups of the nation and has moved to dismantle the traditional political pressure groups such as political parties, labor unions, student movements, and the national electorate. Decision-rules laid out by engineers, technocrats and economists have replaced these traditional political players. The military government in Chile (referred to as a bureaucratic-authoritarian state because of its strong-arm tactics and reliance on technical guidelines (O'Donnell, 1978)), has sought the cooperation of

the nation's business groups to run the financial and industrial sectors of the economy. In contemporary Chile the highest public officers are appointed by the President, the state's allegiance is to social control by means of increased participation from the private sector and there is a strong sense among national leaders that the nation be held accountable only to the international lending community. Since the Congress was suspended in 1973, there have been no institutional checks-and-balances. More importantly, the Chilean junta has deepened its nation's dependence on international capital by increasing the foreign debt. At the same time, however, the Pinochet regime has received tacit approval from the Reagan administration for its fervent anti-communist stance, despite the civil and human rights violations committed by the regime.[1] Although the military's strong-armed tactics

[1] Under the Carter Administration, human rights abuses committed by the security forces of the Pinochet government were greatly curtailed. In the 1980s, under a waning economy and considerable opposition to the military government's rule, human rights abuses began to increase once again. For partial documentation, see Chile, Evidence of Torture: An Amnesty International Report. London: Amnesty International Publications, 1983. An indication of the Reagan administration's tacit approval of the Pinochet regime and, indeed, other authoritarian governments, is borne out by comments made by President Reagan on national television during his October, 1984 debate with former Vice President Walter Mondale. The President was asked by panelist Mr. Kondracke: ". . .there are other such leaders heading for trouble, including President Pinochet of Chile and President Marcos of the Philippines. What should you, and what can you do, to prevent the Philippines from becoming another Nicaragua?" Although the question is directed to the Philippine case but the response is equally germane to the Pinochet government. President

have been denounced by the international community, it has been forthright in meeting its foreign debt with international bankers.

Surely, the Pinochet government is the antithesis of the two previously elected governments or other regimes in Chile since 1932 (Caviedes, 1979). Two aspects of Chilean history make the study of public service provision in that country of particular interest. First, using the enactment of a constitution as an indicator, Chile was the third oldest democratic government in modern history until 1973, following only France and the United States. While its post-independence political history has been periodically marred by short periods of military rule, the demands of the electorate and the action of their representatives helped to shape the "welfare state" that characterized that country prior to 1973. Second, and germane to this present research, is the fact that the Chilean health care system has been world reknown for its comprehensive coverage. Its

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Reagan responded: "I know there are things there in the Philippines that do not look good to us from the standpoint right now, of democratic rights. But what is the alternative? It is a large communist movement to take over the Philippines . . . And I think that we've had enough of a record of letting, under the guise of revolution, someone that we thought was a little more right than we would be, letting that person go and then winding up with totalitarianism, pure and simple, as the alternative. And I think that we're better off, for example, with the Philippines, of trying to retain our friendship and help them right the wrongs we see, rather than throwing them to the wolves and then facing a communist power in the Pacific." Cited from Congressional Quarterly 27 October 1984, pp. 2835-2836.

planning strategies have been modeled by many nations (Roemer, 1985). This health care system has undergone change in light of the guiding ideology of the current regime. Thus, the contrast of the conservative ideology that heralds reduced social spending and a health care system that used to be mostly state funded makes the study of contemporary Chile an inviting intellectual challenge.

Scope and Purpose

This research assesses accessibility to primary medical care in Chile. Accessibility is the potential to procure care which, when realized, becomes utilization. Primary medical care accessibility is reviewed here in its broadest conception; that is, financial, economic, cultural and organizational, and geographic barriers. These components of accessibility are examined in Chapters II through V respectively. Although each chapter builds on earlier ones in its examination of medical care accessiblity, Chapter Two provides sufficient background information to enable the other chapters then to be read separately. A review of the literature that is pertinent to each particular topic is included in each chapter.

The study focuses on the patterns found in 1983. However, health care financing trends from previous years are discussed where necessary. Research findings presented here represent fourteen months of work in Santiago, Chile,

in 1983-84, and one month in northern Chile in 1981. Though the work is written by an outsider to the public and private medical systems in Chile and thus may fail to provide insight into the subtleties of those systems (Sidel, 1980), it benefits from more than 200 interviews with health care workers and consumers, as well as first-hand information obtained from interviews and archival research in public health departments of finance, public hospitals and clinics, and private medical practices. The author had almost daily contacts with users and providers of the various medical systems in Chile. Because much of the data are taken from unpublished sources, special care has been taken to document them as thoroughly as possible.

The methodological approach is appropriately varied, reflecting the diverse nature of the research questions. Methods of analysis range from statistical techniques and computerized mapping, to participant observation and interviews. Every attempt has been made to document the latter source as carefully as possible. A few employees from the public health sector have requested anonymity and this request has been granted. Such cases are few and key arguments presented in the work are not founded on these sources.

This research departs from a branch of medical geography that is best represented by Joseph and Phillips' (1984) and Shannon and Dever's (1974) organizational

emphasis on the delivery of health care (see Chapter V for full description). They point to the importance of considering the organizational and economic structure of a given delivery system before investigating the spatial organization of a place's service network. From this perspective, health care policy is viewed as a subset of the larger national economic and political fabric. Thus the study of geographic accessiblity to primary care facilities --a spatial relationship-- is a moot endeavor if economic access cannot be gained (Rosenberg, 1983). It is first necessary then to understand the restructured financial system and economic accessibility to health care (Chapters II and III). Then the analysis shifts to Santiago for the purpose of offering a "snapshot" of the primary care system of Santiago in 1983 (Chapters IV and V).

The emphasis on health care accessibility refers mainly to primary medical care (PMC), that is, therapeutic or curative care provided by a nurse or physician. In many ways, PMC is the most important component of a delivery system. It generally marks the first point of entry into a given system. The ease of care at the PMC level dictates the comprehensiveness and quality of care at subsequent levels and the extent of a population likely to receive attention. In selecting PMC as the organizational level of analysis, some difficulty arises. Economic indicators of health care are often aggregated and it is difficult to

extract that component that relates solely to PHC. Moreover, the dominant consumer of health care funds in modern western-based systems is the hospital. When data are disaggregated, some allowance can be made for hospital activities but this is not always the case for PHC. Every attempt has been made to identify the use of national-level health care data versus those which are exclusively for PHC.

This study was conducted bearing in mind the caveats and prognoses identified by three recent presidents of the Association of American Geographers. Nichclas Helburn (1983) called for geographers to approach their work by considering how it affects the quality of life. He contended that geographical research should strike a balance between the theoretical contributions to the discipline (basic research) as well as the improvement of the quality of life (applied research). Helburn's note highlights the significance of a geography of public policy and well-being in assessing public services.

In another presidential address, John Fraser Hart (1982) underscored the importance of regional geography as a laboratory where description can provide a testing ground for normative theories of the social and natural sciences. Hart argued that the region is an essential part of geographic research because it provides geographers with a unit of analysis from which generalizations can be made --a necessary ingredient. Like Helburn, therefore, Hart argues

that geographers have an obligation to society, and part of this obligation means learning how to speak to a "new audience" of decision-makers in government and business (1982, 19).

A recent presidential address emphasized the need for combined strategies in geographic inquiry. Richard Morrill (1984) contends that geographers often use secondary data whose limitations and weakness they occasionally fail to recognize. Statistical and cartographic analyses, the collection of primary data and the use of foreign languages should be encouraged in geographic inquiry. It is in this spirit that the present research has been carried out.

In this study of medical care accessibility in Chile, findings are compared with other nations in an attempt to place the changes in the Chilean medical system within an international context. The practical utility of the work is that it provides an assessment of a public delivery system that has been the object of much attention in recent years. Developing nations around the world face a number of problems exemplified by the Chilean case.

This multifaceted research attempts to make a unique contribution to medical geographic inquiry by demonstrating a number of methods that could be employed in assessing health care delivery elsewhere. The systematic reviews of financial, economic, cultural and organizational, and spatial accessibility to primary medical care lend

themselves to evaluations of other health care systems. Those with interests in public health care, planning, urban studies, Latin American studies, and human geography will hopefully find the work to be of some value.

Conceptual and Empirical Components of Accessibility

One approach to health care accessibility is to describe the attributes of the population-at-risk and the characteristics of the delivery system. A delivery system refers to the distribution and availability of health care providers and facilities. Important aspects of the population serviced by this system are income levels, age, health status, and insurance coverage. Factors that intervene between the capacity to produce service and the actual consumption of services are also included in studies of accessibility (Donabedian, 1973, 419; Aday, Anderson, and Fleming, 1980, 25-27).

Studies of accessibility to health services often produce different conclusions, depending upon which dimension of care is studied. A general framework for identifying the dimensions of care is structure, process and outcome. Structure encompasses those institutional and enabling aspects of the distribution and availability of resources. Process identifies the characteristics of the population-at-risk and methods of delivery including provider-patient interactions. Outcome refers to the health

status of the population as a result of a medical care episode and the treatment they receive in the medical care system. Aday et al. have elaborated a number of models in the study of health care accessibility. They define the interaction of structure, process and outcome as they affect access to health care as

> those dimensions which describe the potential and actual entry of a given population to its health care delivery system. (1980, 26)

Accessibility can be further defined as potential versus realized health care events. Potential access emphasizes those arrangements for the potential rendering of care to customers, in terms of wants, needs and resources that consumers buy in the help-seeking process. Realized access can be separated into more objective indicators of utilization as well as into subjective appraisals of the care received. The objective indicators describe the purpose, type, setting, and time span involved in the consumption of health services. Subjective aspects of realized care draw on consumer satisfaction. Measures of consumer satisfaction are patients' evaluations of the quality of care delivered, the information given to them by providers, the ease of care, and attributes of the providers themselves (Aday et al., 1980, 33-34; Donabedian, 1980).

Health researcher Avedis Donabedian (1973) divided health care accessibility into two major components in his seminal review of health services research. Accessibility

is conceptualized as having sccio-crganizational and geographical components. The former emphasizes non-spatial resources in the potential utilization of care. Morrill et al. (1970) have shown how certain configurations in the medical care system influence access tc care. Their Chicago study showed how physicians' referral patterns were a complex function cf the hospitals where they held privileges. They found that 58 percent of all physicians sent patients to only one hospital. Half of all physicians practiced at hospitals that were not the closest tc their offices. These unexpected patterns reflect the urban composition of the city, the type of hospital (teaching, public or proprietary) and the ethnic and racial make-up of the consumers. Socio-organizaticnal factors account fcr the degree of accessibility in these instances.

Geographic accessibility emphasizes the "friction cf space" and the constraints that travel places on getting care (Joseph and Phillips, 1985; Hawley, 1950, 237). Potential barriers to care can be measured in a number cf ways, each suitable to a particular purpose. These measures of geographic accessibility are (i) linear distance, (ii) travel distance, (ii) travel time, (iv) total elapsed time, and (v) travel cost. Many of these spatial dimensions are explored in Chapters IV and V.

Various components of accessibility to medical care are illustrated in this present research. As this review cf

accessibility shows, its conceptualization and measurement comprise a large set of factors that influence the users. No guiding model of accessibility can be assigned in all research exercises. To a certain extent, there is a degree of arbitrariness in socio-organizational and geographic assessments of accessibility (Donabedian, 1973, 419-508). The reader must select to what extent the conceptualization and measurement of accessibility are valid in this particular health care setting.

CHAPTER II
RESTRUCTURING HEALTH CARE FINANCING IN CHILE

Introduction

As the prolonged world recession continues, its adverse economic effects compound existing problems in developing countries. This trend suggests that defining the role of the state in financing medical care becomes an even more complex issue, subject to a wide spectrum of opinions (Deohadar, 1982; Elling, 1981; Zschock, 1980; Basch, 1978; Benyoussef, 1977; Roemer, 1977a; Maxwell, 1974). On one level, this issue can be viewed in terms of governments striking the critical balance between their intentions to foster fiscal austerity and their commitment to support basic social programs. Various constraints exist, however, that impede an accurate measuring of the returns on human capital investment in health and medical care (Hakim and Solimano, 1978; Berg, 1973). These constraints include, for example, escalating capital costs; the complexity of methodology in determining measures of health status outcomes (Zweifel, 1982; Donabedian, 1980); and, inevitably, competition from other sectors of the national economy for the limited resources available (PAHO, 1965).

This chapter focuses on health care financing and delivery to establish a basis of reference on which other aspects of medical care accessibility can be gauged. Chile, with its population of 11.4 million in 1982, is one of the more developed Third World countries (Morris, 1981; James, 1969) that has been described as a modern welfare state. The 1973 military intervention brought to power its current ruler, General Augusto Pinochet, who has vigorously pursued and subsequently attempted to institutionalize dramatic shifts in ideological and pragmatic approaches to government. The neo-classical economic practices adopted by General Pinochet contrast sharply to the mixed and socialized economies of previous administrations (Malloy and Borzutsky, 1982; Vergara, 1981).

A brief review of the Pinochet administration's ideology and policy strategies since seizing power provides baseline insights into the discussion of state-financed versus private medical care services in Chile during this period. In the first three years, the Pinochet government imposed measures to severely cut government spending in efforts to control, and eventually reduce, the spiraling inflation plaguing the Chilean economy. The Consumer Price Index (IPC, or Indice de Precios al Consumidor) fell from 605 percent in 1973 to 198 percent in 1976 (Cortazar and Marshall, 1980). In pursuing a neoclassical model, the government introduced austerity measures as part of a

program called "Operation Shock" (so dubbed because of its immediate effects), and returned state-owned enterprises to the private sector. Of the 460 enterprises owned by the state in 1973, only 23 of them still remained in state control by 1980. Other actions endorsed by the neoclassical model of development were the reduction of import tariffs from as high as 300 percent in 1974 to a flat 10 percent rate (except for automobiles), and the unrestricted flow of foreign capital into Chile (Ffrench-Davis, 1982).

This "shock treatment," however, was not limited to the transfer of state-owned corporations to the private sector. Austerity programs reduced employment in the public sector by 25 percent between 1973 and 1979. These draconian measures were formidable given the historical importance that the public sector has had in employing the broadening middle classes of Chile and the tenacity by which those employees have held on to their jobs (Martinez and Tironi, 1981). Social security and health care expenditures were also reduced so that the cost of Chilean labor, relatively expensive compared to other developing nations, could better compete in the international market (Kornevall, 1977). There was even some discussion about selling public hospitals to private owners, but thus far only one hospital district in central Santiago has been transfered to private management while still being financed by public funds.

The Pinochet government was in a position to restructure and "modernize" health care delivery after it reduced state expenditures and liberalized its economy so that private investment could be encouraged. In 1977, four out of every five medical consultations were state financed (Table 1) and the government sought to reduce this dependence on state support. A robust performance in other sectors of the economy led the government economic team, strong adherents to the neoclassical ideas of Nobel laureate Milton Friedman (1962), to apply free-market principles to health care financing, thereby increasing both private sector participation and out-of-pocket payments by consumers. The main public-sector medical system, the National Health Service, reduced its relative contribution of medical care from about 58 percent in 1978 to 50 percent in 1983.

The abrupt shift in ideology of social development in Chile reflected a larger mood of fiscal conservatism among the developed nations (Fainstein and Fainstein, 1982). Before joining the Reagan administration, budget analyst David Stockman, and his colleague P.W. Gramm, argued that sustained government health care financing tended to "pump up" demand (Stockman and Gramm, 1980). Similar views about supply-side economics in the Chilean health care sector were spelled out in two major policy statements by the Ministry of Health (Ministerio de Salud, 1977; Spoerer, 1973).

TABLE 1

Medical Attention for Acute and Chronic Illnesses, Accidents and Check-ups, Chile, 1977 and 1983

Institution	Percentage 1977	1983
PUBLIC		
National Health Service	57.7	49.7
Other Public Agencies	11.5	9.7
SERMENA (National Medical Service for Employees)	12.2	15.3
Subtotal	81.4	74.7
PRIVATE		
Private Practice	18.6	23.5
No Care	0.0	1.8
Subtotal	18.6	24.3
Total	100.0	100.0

Source: 1977 data from Ministerio de Salud (1983, Table 78, p. 50); 1983 data from Medina (n.d., Table 1, p. 5).

The impact of these recent developments in health care policy in Chile and the changing roles of both the private and public sector in the provision of health care will be addressed in this chapter. A review of public and private perspectives in the financing and provision of social services is undertaken followed by an overview of the evolution of Chilean health care policy in the twentieth century. The main sections of the chapter deal with the

major alterations introduced in the financing and delivery of health services in Chile. The Chilean experience illustrates problems that may be encountered when major policy changes are enacted for the benefit of a short-term economic performance in the national economy.

Public and Private Perspectives on Health Care Financing

The role that the state plays in health care delivery has been discussed in numerous works and from various perspectives (Roemer, 1977b; Navarro, 1974b; Sigerist, 1947). In the delivery of health care the public and private sectors have basic characteristics that should be mentioned for purposes of comparison with the Chilean case.

On the one hand, public ownership and administration of facilities allow planners, on a limited basis at least, to arrange service delivery (Dever, 1980). Health care planning, in particular, guides the medical marketplace in mixed economies when the private sector is small or cost-containment is sought. The Canadian experience, for example, shows that health care planning can account for reasonably accurate forecasts of medical demand (Foltz et al., 1977; Roos et al., 1976; Spaulding and Spitzer, 1972). The state often becomes the main financier of health care when the purchasing power of the citizenry is low or, as in Canada, when the electorate determines that differential financial access to medical care is unacceptable (Blishen, 1969).

Thus, in a sense, state control can reduce the highly skewed distribution of medical personnel and services that inevitably occurs when consumer purchasing power is the only determinant of entry into the health system.

On the other hand, because of the lack of competition in public health care systems, the state influences prices and wages in the medical market. For this reason, there are fewer incentives for reducing costs when compared to a competitive multi-system setting (Katz et al., 1982). The absence of competition, furthermore, weakens managerial behavior. After all, public managers have little, if any, incentive to exert cost-control measures if the financial rewards do not accrue directly to them (Pommerehne and Frey, 1977). In addition, consumers in a state-controlled monopoly can hardly "exit" from that system (Lineberry, 1977; Hirschman, 1970) to express demand for changes in services. Nevertheless, a true competitive marketplace is difficult to find in any country. Government intervention in health care, misinformation on the part of the consumer and the existence of oligarchies weaken the neoclassical argument that true competition can be attained in the medical marketplace (Reilly and Fuhr, 1983).

To be sure, consumers in the medical marketplace face special problems. They are more passive than in other fields due to their limited understanding of medical matters. The consumer-supplier relationship is not at arm's

length, as in many other markets, but rather becomes one of trust. Patients abdicate considerable power to their "agents" --physicians and allied health care personnel-- not only because they are unfamiliar with clinical aspects of the medical system, but because they know little about costs (Reilly and Fuhr, 1983). Yet it is rare, even in the socialized medical systems of Eastern Europe, when consumers do not incur some financial costs, albeit nominal or token ones (Kaser, 1976).

On the supply side of state-controlled medical systems, salaried practitioners who, like management personnel, may be less cost-conscious than other personnel who work on a fee-for-service basis. Practitioners in state employment supposedly behave more altruistically than their counterparts in the private sector.[1] Although the state frequently becomes the principal guarantor of providing accessible health care, thoughtful discussion about which medical system creates the most competition will likely

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[1] For an elaboration of this point, see Navarro, V. Medicine Under Capitalism, Croom Helm, London, 1976. One of Navarro's arguments is that the whole basis for the capitalist state's existence is to service the diswelfare that the means of production creates. In the Chilean case, however, it is noteworthy that Navarro gives little attention to the performance of public-sector medical care under the governments prior to that of Salvador Allende. This is a conspicuous oversight by one known for his historical perspective in health services research. This and similar points have been made in a recent review. See Reidy, Angela. Marxist functionalism in medicine: A critique of the works of Vicente Navarro on health and medicine. Soc. Sci. Med. 19, 897-910, 1984; especially pp. 907-909.

continue for some time. When the state provides a service, the Pareto notion of optimality (claiming that net gains in human welfare are attained only when everyone is better off or no one is worse off), although an admirable goal (Ostrom, 1977), is difficult to reach when governments change hands or succumb to political and electoral pressure.

Health care and social security programs in Latin America have developed principally along these lines: political favoritism has produced a layer of duplicative programs that have accentuated social class differences (Foxley, 1979; Mesa-Lago, 1978). These programs, moreover, are geared to satisfy certain groups such as unions, state employees, or the armed forces. Developed countries are not exempt from the problem of political favoritism either. In their analysis of the Italian case, for example, Fausto and Leccisotti observe that

> government intervention in the health sector is not valued by its output, but according to the inputs employed thus leaving ample room for the politicians' "discretion" in determining what to produce and how. (1981, p. 39)

Private ownership and financing of medical care in its purest form is rare even in the U.S., the largest for-profit medical market in the world. Government intervention there ranges from Certificate-Of-Need reviews, Medicare and Medicaid subsidies, and barriers to entry such as licensing and drug regulation. That nearly 40 percent of the revenues in the U.S. health care system are derived from public

subsidy suggests that it is not a pure laissez-faire system (Gibson, 1980).

A number of characteristics typify the mixed medical marketplace that tends to fall under the "private medical system" rubric. First, certain types of private and for-profit medical systems such as Health Maintenance Organizations (HMOs) induce greater competition which, in turn, can reduce certain medical costs. The cost savings that result provide greater accessibility and an improved health status for users than those outside of the HMO system (Homer, 1982; Enthoven, 1981).

A vexing problem, however, remains; on the one hand, medical practitioners often invest in capital equipment that raises operational costs. On the other hand, these costs may prevent any savings (derived from competition in the marketplace) from being passed on to the consumer. Second, the private medical market model does not discriminate with regard to age, sex, or race. Only purchasing power, as measured by direct out-of-pocket payments or commercial insurance carriers, determines access to medical care (Aday and Andersen, 1975). In the U.S., for instance, the "medical market" generally refers to the private health insurance market (Reilly and Fuhr, 1983). Third, private market managers and entrepreneurs are able to adjust prices and have more freedom in employment practices than their counterparts in the public sector. Fourth, the private

sector may face higher start-up costs that public operations overcome more readily (Furst, 1981). Private practitioners may procure capital at costlier rates but they allocate funds with fewer restrictions than the public sector.

One final aspect to note about the private medical sector is its ability to adjust prices and engage in marketing with relatively few restrictions. It is precisely the versatile nature of private medical operations--their ability to charge according to what the market will bear -- that sets them apart from the public system. As Pommerehne and Frey have aptly noted:

> Theoretical reasoning alone cannot settle the dispute of whether public or private production is more efficient. (1979, 227)

The strengths and weaknesses of each system acquire much more meaning when applied to a specific geographic and political setting which the following sections address.

Public Health Policy in Chile: 1918-1979

The European programs that increasingly favored public financing of health care and social security clearly influenced Chile and the Southern Cone[2] nations' progress in this area. Program organization and philosophy set forth in Germany under Chancellor Bismark in the 1880s were

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[2] The term "Southern Cone" encompasses the southern portion of South America and is also sometimes referred to as the "ABC countries." These nations refer to Argentina, southern Brazil and Chile. To this functional region must be added Uruguay.

precedents (Arroba, 1979; Roemer, 1964). What has been described by Sigerist (1947) as Bismark's attempt to undermine the encroachment of socialism in Europe developed into a labyrinth of state social programs in Europe and the Southern Cone. Throughout the present century, the public sector in Chile has provided the greatest impetus in the financing and delivery of health care. In fact, the Chilean government is one of the oldest public financiers of medical care in the Western Hemisphere, dating back to a social security and pension program for public railroad workers in 1918. Like the developed industrial countries of Western Europe, the strongest trade unions in Chile also pressed for illness insurance programs for union members and their dependents. By 1925, the Chilean government had developed child and infant milk distribution programs, disability compensation, and old-age pensions (Romero, 1977).

In Chile, ideas about social equality led to the passage of two major health insurance laws in 1938, the Workers Insurance Law and the Preventive Medicine law (law Decree 6174). These two laws provided medical and retirement benefits to both public and private workers. Also created in that same year was what was to become the nation's largest non-indigent medical program, SERMENA (National Employees' Medical Program) (Romero, 1977).

Government participation in health care financing and delivery in Chile had steadily progressed during the 1940s

so as to warrant the creation of a central, coordinating agency in 1952, the National Health Service (SNS) in 1952. The pertinent legislation, Law Decree 10,383, was passed in an election year, responding to perceived voters' demands. This is a point that many cite as a justification for the presence of an authoritarian government today. Unlike civilian governments, authoritarian governments are able to articulate health policy without bending to political action groups that require special concessions (Hakim and Solimano, 1978; Caviedes, 1984; 1979; Hall and Diaz, 1971). The SNS was to coordinate more than fifty health and medical programs that operated without central administration and service coordination. Most welfare boards and private charity organizations (juntas de beneficencia) supported by the Catholic Church also fell under state administration (Goic, 1979). However, many public and private workers who belonged to pension and medical groups called cajas continued with their plans, and many of them still operate today. In keeping with a well-defined trend among developed countries throughout the century, the Chilean health care system evolved into a high degree of organization and bureaucracy in order to control cost while also decentralizing service delivery (Mesa-Lago, 1978). However, highly structured bureaucracies are not unique to the developed realm (Anderson, 1972). Ugalde (1978) traced the development of health care delivery in two authoritarian

nations (Iran and Colombia) and concluded that program fragmentation in those settings lead to poor service delivery.

State financing and delivery of medical care in Chile reached its zenith during the years of the Allende government (1970-73). But after his fall, the state's role in health care delivery took a different course with the introduction of incentives for the privatization of some state functions. In response to the bureaucratic maze created by more than fifty-five social welfare programs, thirty-one programs for the elderly, and thirty-five separate curative care systems, the Chilean government once again reorganized health services in the late 1970s. The SNS was rearranged into the S.N.S.S. (National Health Service System), in 1979, and SERMENA became FONASA (National Health Fund) under the mandate of Law Decree 2763 (Figure 1). The main feature of this rearrangement was that instead of allocating budgets to health districts, S.N.S.S. budgets were to be partially based on a capitation basis paid to health service districts (twenty-seven nationwide). Capitation charges are now monitored by a new fee called FAP (factura de atencion prestada) and help to allocate budgets according to utilization of medical services instead of direct allocations that do not adjust for consumption of medical goods and services (Ministerio de Salud, 1982).

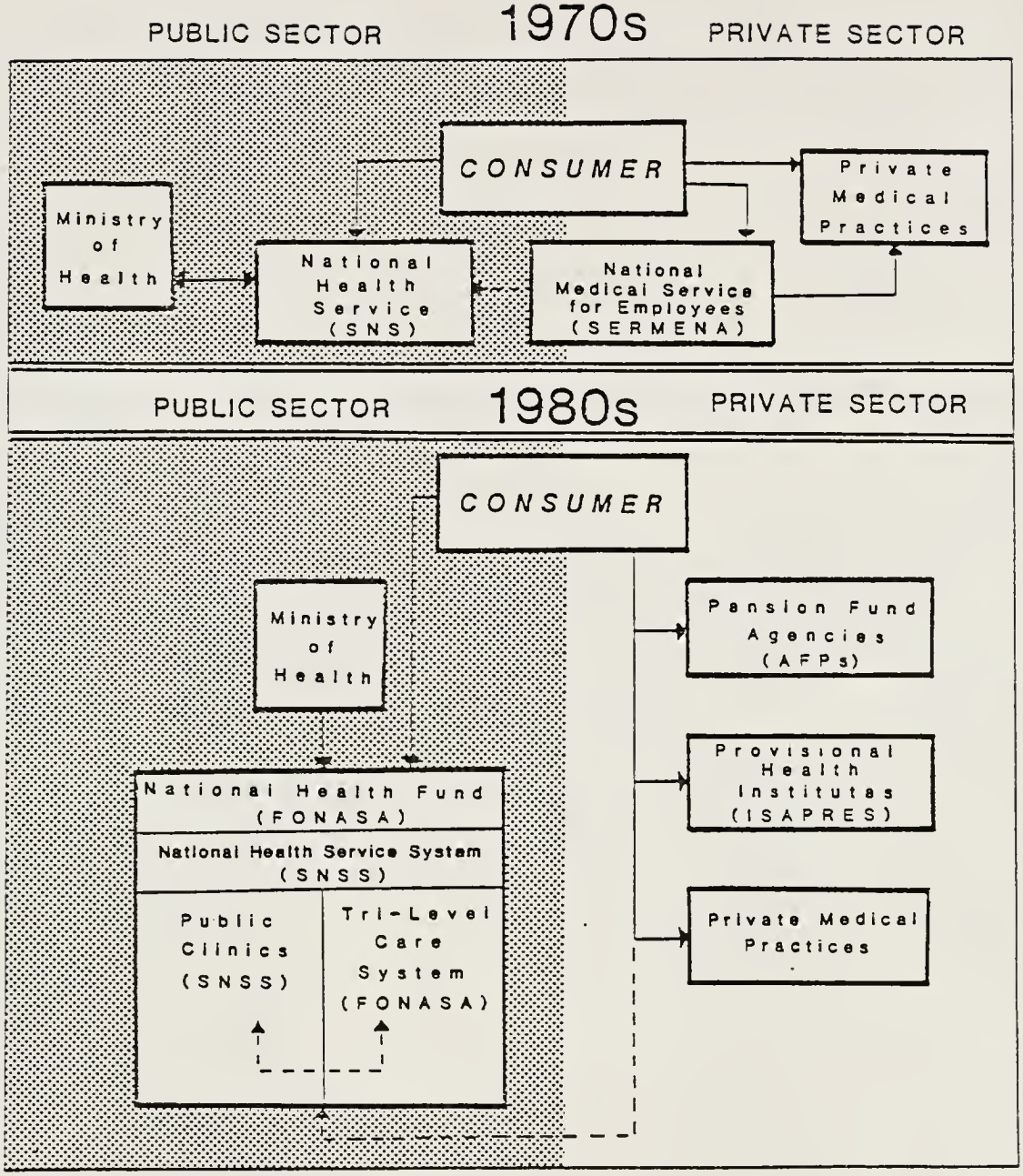

Figure 1: Structure of Chilean Health System

Source: Modified greatly after Haignere (1982, Figures 3 and 4).

Changes in Health Care Financing in Chile in the 1980s

Health care financing in Chile in the 1980s can be divided into four types of arrangements according to socioeconomic criteria (Table 2). The upper socioeconomic strata seek private care exclusively from solo or group practices. Both ambulatory and hospital care are delivered by private providers. The upper segments of the middle classes seek care from HMO-like ISAPREs (Provisional Health Institutes) or private medical centers. Middle income groups are treated predominately by the National Health Fund (FONASA) and pay at least 50 percent of the cost of ambulatory and hospital care. Indigent and low-income workers (*obreros*) receive care from the National Health Service System without charge.

Transfer of Clinics From National to County Level

Several aspects of state-financed health care have changed in the 1980s. One change, stipulated by Law Decree 3060, has been the transfer of a small number of public health clinics and rural health stations (*postas rurales*) from S.N.S.S. management to county-level (*municipio*) administration (Ministerio de Salud, 1982). This administrative transfer (or "municipalization" in its anglicized form) purports to give municipal authorities more autonomy in clinic management. An innovative idea, this

TABLE 2

Sources of Medical Care Financing in Chile by Income Level, c. 1982

Income Levels [1]	Size (%)	Annual Income (US$) [2]	Total Income (%) [2]	Occupation [3]	Source of Care [1]	Cut-of Pocket Payments [1]
LOWER	40	962	11.5	unskilled labor, domestic workers, indigents, small farmers	National Health Service System (S.N.S.S.)	none
MIDDLE	40	2,507	29.9	retail workers, self-employed, low-level government workers, skilled laborers	National Health Fund (FONASA), priv. & public pensions (cajas)	graduated scale; about half
UPPER MIDDLE	10	5,480	16.3	professionals, high-level govt. wrks., mid-level mangmt.,	priv. med. centers, ISAPREs (Provisional Health Institutes) priv. insurance	graduated scale; at least 50-70%
UPPER	10	14,230	42.4	professionals, high-level technical, entrepreneurs	priv. med. centers, priv. solo physicians	nearly 100%

(1) Determined by the author; (2) Calculated at 39 pesos to the U.S. dollar. Source: Riveros (1983); (3) Source: Martinez and Tironi (1982, 22).

transfer is thought to be more cost effective because clinics are reimbursed on a capitation basis that pays slightly more than reimbursements in S.N.S.S. clinics. Municipalities administer clinics for five years, after which time contracts can be renewed. To ensure quality care, only medium-sized facilities with service populations of 40,000 or less can participate so that urban service districts are more manageable in the new program (Giaconi, 1982).

Government authorities base the municipalization program on two notions: administrative decentralization and efficiency. The former recognizes that local government is an intermediate organization that is effective in problem-solving because municipal officials "know the demands and preferences of the people." (Ministerio de Salud, 1982, p 3) When the municipalization program came on line in 1981 and 1982, they were guaranteed a minimum reimbursement for each medical consultation provided. Again, this scheme was devised to ensure fiscal support only for medical care delivered and thereby avoided the complicated procedure of projecting needs based on historical utilization data. However, with all curative care guaranteed by the State, some clinic directors broadened the scope of primary curative care to boost revenues. In some cases it was reported that clinic personnel visited elementary schools and gave vaccinations or checked for oral hygiene. Curative

care charges were then applied en masse. Other cases showed that clinics remained open in the evenings to tap the working-adult market. Community residents in small towns could visit the clinic in the evening and receive blood-pressure checks. This two-minute procedure received the same capitated reimbursement from the State as a twenty minute medical consultation. In light of these abuses and the difficulties in differentiating between curative and preventive care, the Ministry of Health placed ceilings on the number of treatments that qualify for reimbursement. Before the end of the first year of operation, reforms were enacted to curtail runaway costs (Personal communication, Servicio Metropolitano Salud Norte, 21 June, 1984). Subsequently, a number of directors of municipalized clinics expressed much unwillingness to renew contracts with national authorities (Personal communication, Directors of municipalized primary care facilities, April-July, 1984). The fixed reimbursement ceilings limited profit-making capabilities, which in turn reduced capital investment and staff increases that clinic directors expected.

Municipal authorities have expressed interest in assuming clinic management only in the best organized and staffed clinics. The health district in southeastern metropolitan Santiago (comprised of low-income neighborhoods), for example, has had no offers, nor are such offers forthcoming (Personal communication, Servicio Salud

Suroriente, July, 1984). High-income districts in the northeastern municipality of Las Condes, however, have had greater success in this venture. Given the capital-generating potential that existed (although funds went to hiring staff and buying equipment), there is suspicion that the long-range program goal is not merely to shift management of health facilities to another layer of public bureaucracy, but to set the stage so that private medical firms eventually can manage these facilities (Jimenez de la Jara, 1982a). There is no evidence that the "municipalization" program will change the efficiency of daily clinic operations. A more credible justification suggests that private management will take control in the long-run, an idea alluded to in a policy statement issued by the Ministry of Health two months after the 1973 military intervention (Spoerer, 1973).

New Fee Schedules and Health Care Financing Agency

The difficulties in establishing out-patient charges in developing countries have been summed up well by Boland and Young (1983), who state that real costs cannot be identified; only "corresponding costs" can be derived for the purpose of estimating medical charges. A formidable change in health care financing resulted with the transition from SERMENA to FONASA. In April, 1983, new price schedules for ambulatory and hospital care were instituted. Like

SERMENA, FONASA delivers curative care to middle income groups (empleados) but allows consumers to select from a greater number of providers from the public and private sectors than did SERMENA. SERMENA was susceptible to a number of abuses that were corrected under FONASA. Physicians could, for example, overcharge patients (at no expense to themselves or patients) by simply filling out a voucher and later redeeming it: an abuse that has been recognized even by the Chilean Medical Society (Colegio Medico) (Entrevista con el Dr. Luis Gonzales, 27 March 1983). Also, under SERMENA patients did not have to present identification to a third party before receiving a voucher. Thus, it was easy for non-members to gain illegal access into the SERMENA medical system even though vouchers were purchased (Ochoa, 1978). To avoid these abuses that plagued SERMENA, FONASA patients now present identification to third parties (bank tellers or FONASA clerks) and pay for a part of the voucher before service is rendered.

FONASA is divided into three levels of care into which both consumers and providers (physicians, midwives, physical therapists, nurses, medical technologists, laboratories) freely enroll. There should be no clinical difference in medical care among these levels, but younger physicians, general practitioners, and non-specialists are concentrated in Level One, while experienced specialists are concentrated in Level Three. This tri-level system, with its option to

select a specific provider and level of care, is seen as the main attribute of the "free election system" (sistema de libre eleccion). At each level of care the government contributes 250 pesos (about $3.00) per voucher. For example, in 1983 a Level One voucher cost the patient 250 pesos, Level Two cost 500 pesos ($6.00), and Level Three cost 750 pesos ($9.00). Patients purchase a combination of vouchers (depending on the service) and turn them over to the medical practitioner upon delivery of service. In other words, the new FONASA fee schedules translate into a state-subsidized curative care system of 50, 33, and 25 percent for the three respective levels of care. The government contends that

> this differentiation of levels allows users to select the health care professional according to their budget and preferences. (CDEPLAN, 1983, p. 79; author's translation)

A variety of public financing schemes exist to earmark funds for health care financing in other countries. In Canada, for example, a special sales tax helps to finance hospitalization costs. Brazil uses tariffs on agricultural exports to finance rural health services (Mach, 1978). All working Chileans other than laborers must remit 6 percent of their wages to FONASA or other government-approved health system by means of payroll deduction. In addition, they must pay for specific curative and therapeutic charges. Mandatory payroll deduction rates rose from 4 percent in 1981 to 5 percent in January 1983. Most recently, six percent of all

wages and salaries have been directed to a curative medical care system of the consumer's choice. The determination of the new six percent health care withholding (cotizacion) has not as yet been disclosed publicly (Personal communication, FONASA officials, October, 1983), and to those seeking to understand the financial workings of the delivery system, it appears to be an arbitrary decision. There is good reason to suspect that the increase is an austerity measure to confront the fiscal crisis and to meet the foreign debt payments: Chile has the second highest per capita debt in Latin America, following oil-rich Venezuela.[3] Though evidence on curative medical care financing around the world indicates that partial payment enhances the credibility of public medical services among users (Kohn and White, 1976), the FONASA price hikes are not token costs for consumers. Real wages in Chile fell by 15 percent over the past decade (Cortazar, 1983). Furthermore, the severity of the price hikes was measured by the National Statistics Institute at 134.8 percent in the last quarter of 1983: the second highest increase of 347 items that comprise the Consumer Price Index (IPC) (Alzas superiores al 40% en 30 productos

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[3] Per capita national debt figures derived for the leading debtor nations in Latin America are (in $U.S.): Venezuela, $1,738; Chile, $1,507; Argentina, $1,374; Costa Rica, $1,235; and Mexico, $1,132. Population data for computing per capita debt are taken from Boletin Demografico 16, CELADE (Latin American Demographic Center), Santiago, p. 2, 1983. Foreign debt totals come from preliminary 1983 figures in Sintesis Preliminar de la Economia Latinoamericana durante 1983, Santiago: United Nations Economic Council, p. 44, 1984.

del IPC, 9 October 1983).

Beyond the normative scheme of the FONASA program is a very different record of satisfying consumer needs. A 1983 survey of 2,820 persons in Greater Santiago, undertaken by researchers from the University of Chile's School of Public Health and Gallup Chile, Inc., ranked four types of private medical care (private clinics, pre-paid group practices, private individual practices, care given by friend or family) and four types of public medical care (armed forces' programs, S.N.S.S., FONASA, and other public programs) (Medina, n.d.). This ranking was based on the utilization of medical care for acute and chronic conditions, hospitalization, check-ups, and dental care. FONASA users had the lowest average utilization rates among the eight systems studied for the five types of care. Furthermore, it was found that FONASA users had the highest rate (39 percent) of non-utilization for acute care needs (Medina, n.d.). These findings suggest that as a middle income group, FONASA patients have incurred the greatest relative costs among all health consumer groups, thereby reducing medical demand to the lowest levels in the nation.

A major premise of the FONASA program is that the technical competence of curative care is identical in all three levels: only the amenities such as office or clinic setting, waiting time and physician specialty should vary. To date, however, no study has investigated the waiting time

among FONASA patients nor their satisfaction with the new system.*

Supply and demand forces in the new FONASA hierarchy, as measured by the proportion of physicians and patients in each level of care, have yet to reach a state of equilibrium. Table 3 shows that Level I (the least expensive level of care) patients have the least access to physicians while Level Three patients enjoy the most favorable physician-to-population ratio. Physicians are clearly more attracted to the higher levels of care, while most patients opt for the least expensive care.

A breakdown of income sources during the first three years of FONASA operations is presented in Figure 2. Direct fiscal support to FONASA has fallen almost at the same rate as the sales of medical vouchers have increased. This trade-off between fiscal support and out-of-pocket payments expresses the aims and philosophy of the social development model of the present Chilean government.

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* The Ministry of Health in Chile has stated to the press on numerous occassions that a major survey of users of public-sector medical programs was carried out in 1983. To the author's knowledge, however, the survey design and printed findings have not been disclosed. The author was denied a copy of the survey results, one of two occassions that requests for information from a public agency were turned down in 14 months of fieldwork.

TABLE 3

Physician Inscription and Patient Utilization of FONASA by Level of Care, Chile, 1983

Level of Care	Physicians (A) Number	%	Patients Attended (B) Number	%	1:B/A
One	2839	36.3	1,552,055	48.6	1:547
Two	3440	44.0	1,324,145	41.5	1:385
Three	1543	19.8	319,948	10.1	1:207

Sources: Physician data from "Directorio por profesion hasta 17:00 horas del 10-09-83," unpublished data, September 9, 1983, National Health Fund (FONASA), Departamento de Operaciones; Patient data from "Frecuencia segun cantidad, horario, e item." no date, FONASA, Santiago.

Pension Fund Agencies (AFPs)

Chileans that do not place their monthly wage deductions in prepaid medical group practices or FONASA can elect state-guaranteed private pension fund schemes (AFPs, Administradoras de Fondos de Pension). Since 1981, the AFPs have accepted monthly wage deductions and interest accrues on unused capital. In 1984 the government approved a plan that would allow AFPs (about 12) to invest their funds in public firms as risk capital. If this venture proves to be profitable, in several years the AFPs will be able to invest

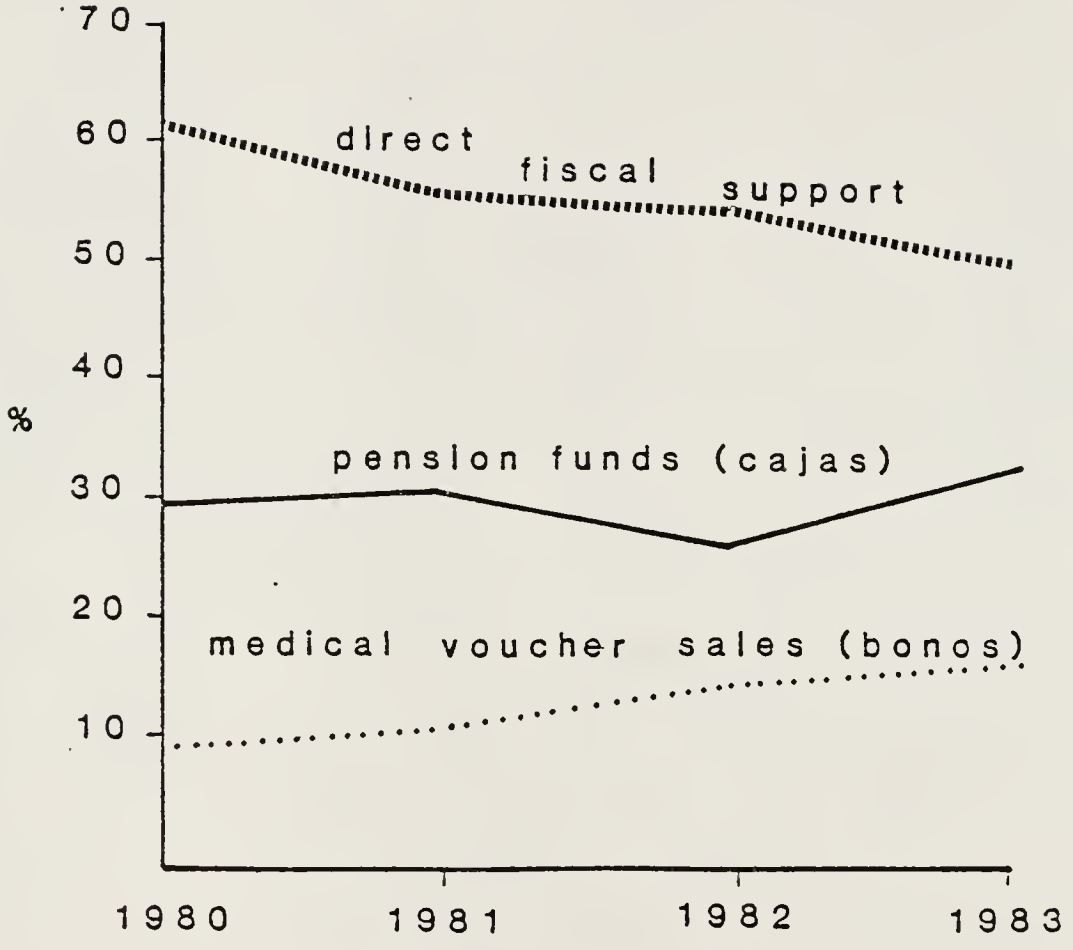

Figure 2: Sources of FONASA Operating Budget

Data source: Balances Presupuestarios al 31 de Diciembre de 1962-1983, FONASA (National Health Fund), Santiago.

their clients' funds in private firms.[5] According to government officials, profits generated from AFP investment will be high, but there is good reason for skepticism. The November, 1981 collapse of the short-lived (1977-81) Chilean "economic miracle" and the high per-capita foreign debt suggest that the state is searching for scarce capital in the aftermath of a major monetarist failure. Treasury officials (Ministerio de Hacienda) have privately expressed doubts that the government would be able to insure fully the AFPs should they default (Personal communication, Departamento de Hacienda, 1984).

The Production of Health Care in Chile

The turn to a market-oriented economy has brought marked changes in how the S.N.S.S. budget is allocated. The S.N.S.S. delivers its medical care to most Chileans, the blue-collar workers and indigents of the country. As mentioned earlier, about 58 percent of the population receives ambulatory or hospital care from the S.N.S.S. in 1977, and about 50 percent in 1983. Implicit in the shift away from state financing of health care services is the notion that increased health care budgets (inputs) do not necessarily bring about concomitant improvements in the health status of the population (outputs). In fact,

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[5] See various editions of the Santiago daily newspaper El Mercurio, especially the "Economics and Business" section Economia y Negocios, April 1, 3, 11, and 18, 1984.

pressure groups in Chile have historically argued the opposite: more resources yield better health (Baczynski, 1982; Mesa-Lago, 1978; Ochoa, 1978). The major changes in the allocation of resources to the main public health delivery system in Chile, the S.N.S.S., are outlined in this section. This is the first analysis, to the knowledge of the author, of income statement account trends for the 1962-83 period.

In line with a subsidiary role in the delivery of all goods and services in the public sector, the S.N.S.S. replaced the main supplies purchasing organism, the Central de Abastecimiento (Central Supply Warehouse), as the only purchaser for public medical systems. Free-market economics dictate that more suppliers of medical care items (medications, medical equipment, beds, etc.) drive costs down. Figure 3 illustrates the relative decline in pharmacy and prothesis items purchased by the S.N.S.S. from the Central Supply Warehouse. Since 1974, private wholesalers have been able to offer some lower cost items to public hospitals and public clinics. This policy change removed the Central Supply Warehouse from a virtual monopoly (89 percent in 1975) to a supplier of only 40 percent of pharmacy and prothesis items in 1983. The Central Supply Warehouse now sells to the private sector and has increased its total sales to the private sector from roughly 5 percent between 1974-79 to 14 percent for the 1980-83 period. By

opening itself up to private suppliers, the S.N.S.S. has also purchased more from multinational manufacturers. Imports of foreign manufactured medications and prostheses increased from about 30 percent to 40 percent between 1979 and 1983 (Lagos, 1984).

Since 1962, when detailed income statements came into use, the sale of goods and services has never contributed more than 10 percent to the S.N.S.S. operating budget (Figure 4). Within that 10 percent margin, however, revenues have climbed and fallen according to the health policies of four administrations. This item increased markedly under the conservative government of Jorge Alesandri (1958-64) and during the early years of the liberal Christian Democratic government of Eduardo Frei (1964-70). Subsequently, the Pinochet government increased revenues (i.e., charges to consumers) from medical care; but again, within the 10 percent margin that characterizes the twenty-one year period.

A breakdown of revenues derived from total goods and services within the S.N.S.S. is presented in Figure 5. Despite a short period of data unavailability from 1967-69 (due to a change in accounting procedures specified by the General Comptroller's Office), three trends are apparent: (i) the sale of medications contributes insignificantly to revenues, (ii) primary care charges have supplied less than 10 percent of all revenues, and (iii) vouchers bought under

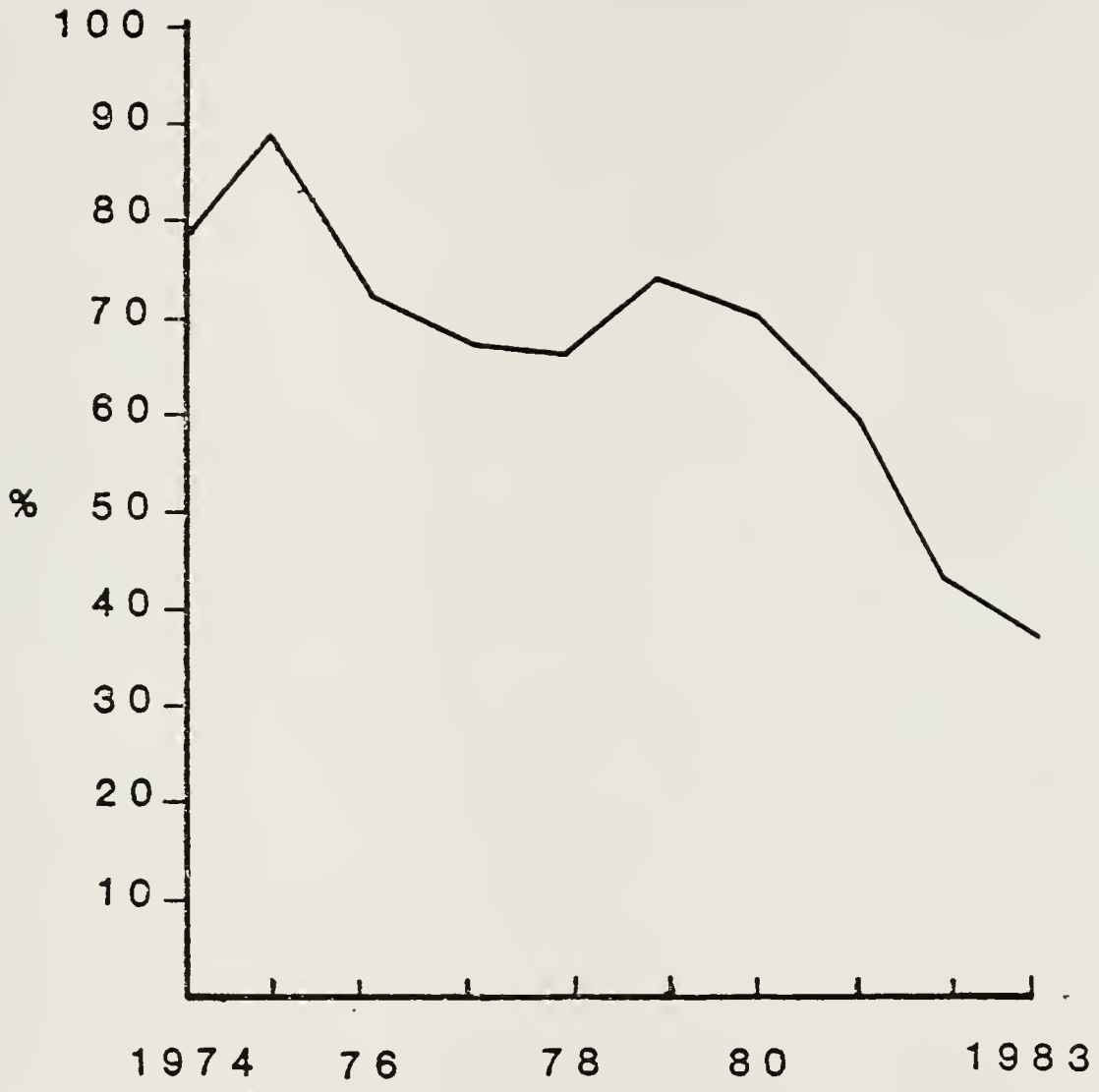

Figure 3: Pharmacy and Prothesis Items Purchased by Chilean Public Health System from Central Supply Warehouse

Data source: Balances del Servicio Nacional de Salud, 1974-83. Unpublished data, Departamento de Contabilidad, Central de Abastecimiento, June 1984.

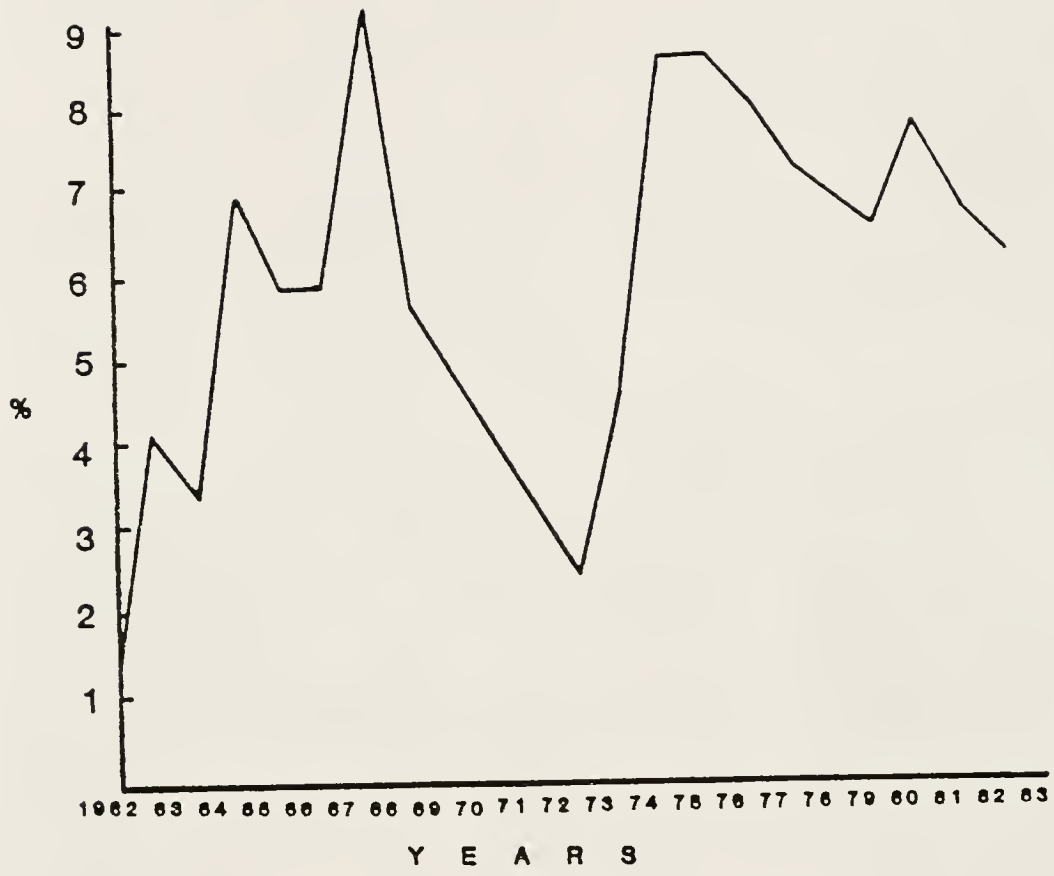

Figure 4: Contribution to Total Operating Budget by Sales of Goods and Services, S.N.S.S., 1962-83

Data source: Balance Presupuestario al 31 de Diciembre de 1962-83. Santiago, National Health Service of Chile (S.N.S.S.).

SERMENA (1972-80) and FONASA (1980-83) by white collar middle class workers have contributed about half of all revenues under the "goods and services" rubric. Thus, of the 10 percent revenues from goods and services in S.N.S.S. public health facilities, about half of the revenues (or 5 percent of the total operating budget) are derived from white-collar workers who opt for the less attractive facilities of the S.N.S.S. The selection of S.N.S.S. public health facilities by white-collar workers may be due to geographic proximity to work or residence, the attraction of using less expensive levels of care (among the multi-level systems of care that characterized SERMENA and FONASA), or the perception that the S.N.S.S. medical personnel deliver quality care. These possibilities will be considered in Chapter IV.

A final item of the production of public health care in Chile is shown in Figure 6. Turning to the expense side of the S.N.S.S. operations, three items were considered from 1962-83: personnel, pharmaceutical and prothesis, and real investment. However, personnel expenses have been smaller since 1973. Personnel expenditures (salaries and wages) increased steadily from 1962-73, the years of populist governments. Since the outset of the present regime in Chile, personnel expenses have consumed about 50 percent of total expenses (changes in personnel size will be discussed later). Pharmacy costs have nearly doubled since 1974; this

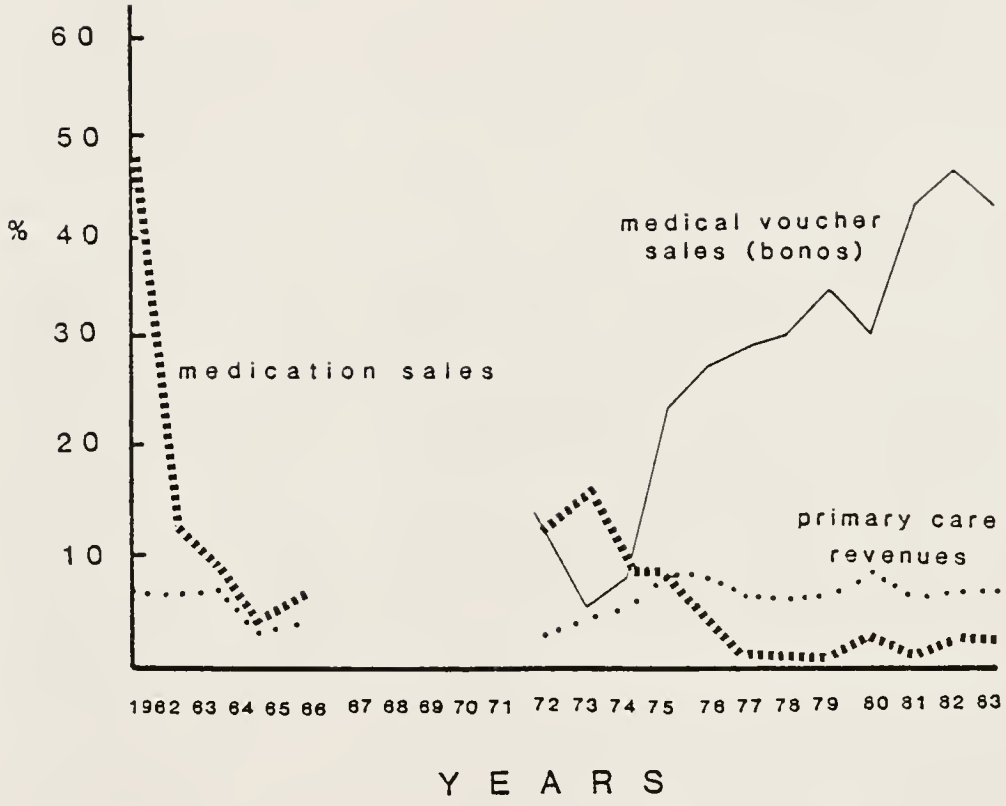

Figure 5: Breakdown of Revenues Derived from Total Goods and Services, S.N.S.S., 1962-66, 1972-83

Note: Data were unavailable from 1967 to 1971.

Data source: Balance Presupuestario al 31 de Diciembre, 1962-83. Santiago, S.N.S.S.

is consistent with earlier reports from both Chileans (Belmar et al., 1977) and foreign analysts (Navarro, 1974a) who based similar claims on interviews with health workers. Lastly, real investment (primarily equipment purchases) has been somewhat cyclical but less than 10 percent of all expenses under all administrations.

In short, trends in the production of health care as indicated by selected accounts from income statements suggest four key points. First, most supplies are now purchased for public medical care on the open market. No longer does the Central Supply Warehouse buy and sell exclusively for the S.N.S.S. although comparative prices from other private competitors were not considered here, it is assumed that public health facilities purchase about 60 percent of their (1984) supplies from private distributors who offer lower prices than the Central Supply Warehouse. A three-fold increase in the proportion of medications purchased from foreign producers was noted between 1979 and 1983 and may, in the long run, strengthen the comparative advantages that foreign pharmaceutical firms hold in the Chilean market. Second, less than 10 percent of the S.N.S.S. budget has been derived from the sale of goods and services. This percentage has fluctuated in accordance with the health policies of the four governments in power from 1962 to 1983. These data are at variance with the claim that the poor are contributing significantly to the

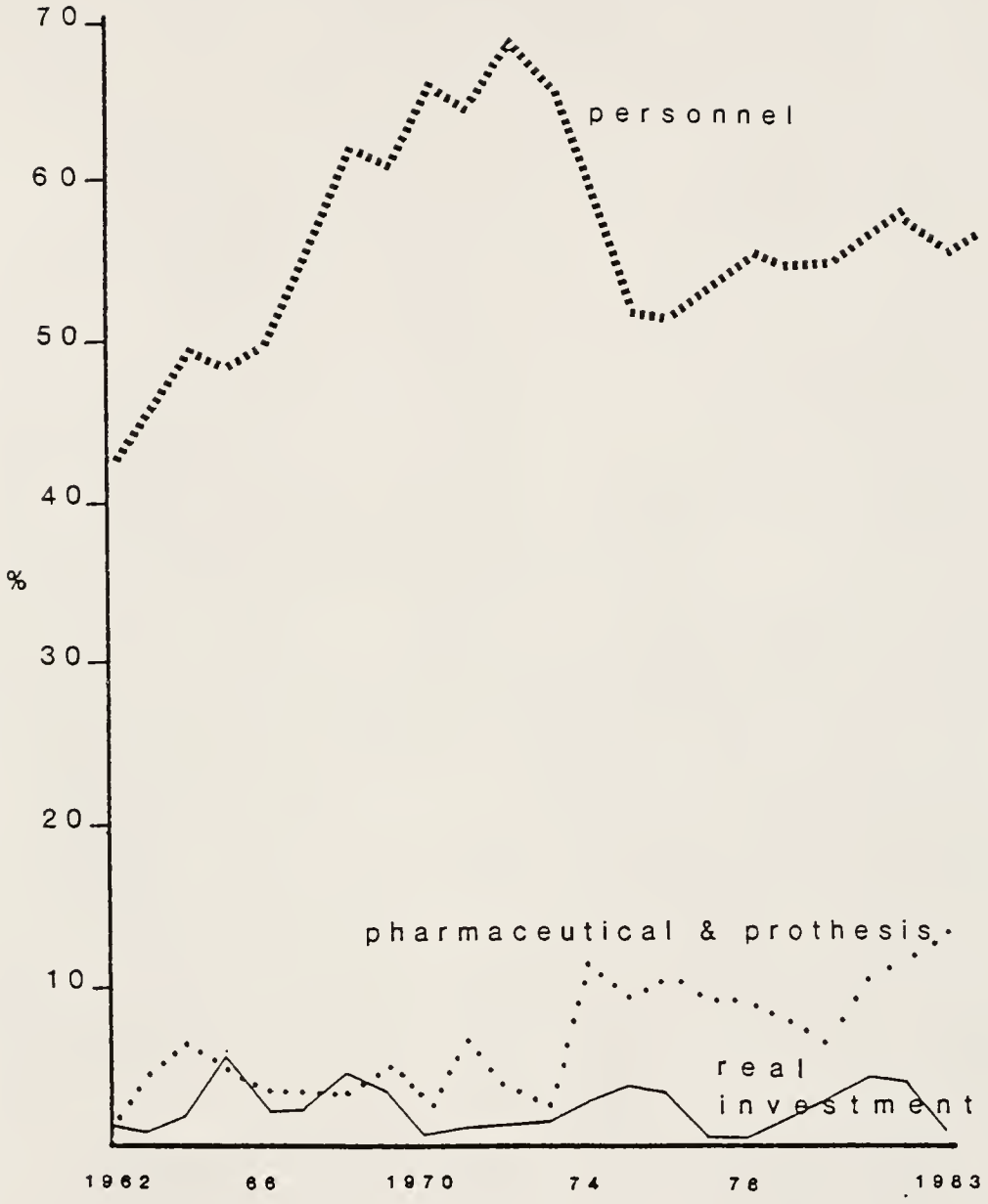

Figure 6: Selected Expenses of S.N.S.S., 1962-83

Data source: Balance Presupuestario al 31 de Diciembre. 1962-83. Santiago: S.N.S.S.

financing of public health care in Chile. Clearly, more out-of-pocket charges under the Pinochet government have been levied than during the Allende period. Currently, however, the relative contribution to the total budget is no greater than during the Christian Democratic government of the late 1960s. Third, of all goods and services sold in S.N.S.S. facilities, the trend has been to receive more revenues from users of the middle-class systems of SERMENA (until 1979) and FONASA (1980-present). Convenience or continuity of care may account for this cross-over from one public system to the S.N.S.S. where amenities in the latter (i.e., waiting time, facility cleanliness, crowding) are few. Finally, personnel expenditures have dropped from a high of 68 percent in 1972 to roughly 55 percent in the 1980s. This trend is consistent with both the retrenchment in total personnel employment by the S.N.S.S. between 1970 and 1980 and the purchase of more high-technology medical equipment. This latter move has been the focus of much concern about the concentration of resources and capital equipment in hospitals as opposed to ambulatory care centers (Jimenez de la Jara, 1982b).

Expanding Role of Private Medical Sector

Free-market approaches in the health care sector in Chile, while clearly tied to the neoclassical school of economics, are not without precedent elsewhere in Latin America. Brazil has moved toward the privatization of certain aspects of its curative care system in an attempt to spur competition and drive health costs down. In 1976, 76 percent of Brazil's hospital patients were treated in facilities administered by private management. By 1981, that figure reached 88 percent (Rezende and Mahar, 1981). This contractual arrangement in Brazil has allowed the private sector to assume a greater share in health care delivery while freeing the public sector of some cost.

Public expenditures in the Chilean health care sector have decreased since 1974 while private expenditures have risen (Table 4). Though a disaggregation of the public and private components is not readily available, it is likely that a large part of the increase in the private sector is due to capital purchases. Further refinement of private sector expenditures is possible through a disaggregation of tax office data (Servicio de Impuestos Internos) by facility type (hospital, clinic, group practice, solo practice), but this information is not accessible to the public.

In keeping with fiscal restraint intended to avoid crowding out private sector investment, greater losses of revenue, and inflation, the Chilean government signed an

International Monetary Fund (IMF) Stand-by Agreement in 1984. This agreement stipulates that the non-financial public sector deficit (net government indebtedness and non-financial public enterprises) cannot surpass 4.5 percent of the Gross Domestic Product. It has been predicted that the large 1984 fiscal deficit, up from the 1983 level of 2.4 percent, will give rise to greater public borrowing from the domestic banking system (U.S. Embassy, Santiago, 1984).

At least two implications can be drawn about the impact this borrowing will have on medical care. First, the non-financial debt will likely keep fiscal support for medical care at recent levels or force budget cuts in order to comply with the IMF repayment schedule. In other words, the downward trend of public funding for health care (Table 4) will probably continue while private investment increases. Second, and in support of this latter projection, private medical care investment should increase. A 1984 U.S. Embassy report from Santiago reports that medical equipment and instruments are one of nine major investment prospects for U.S. suppliers. Unless consumers now being attended in public health systems reduce their demand for medical services, further public retrenchment will send some public users to private providers (U.S. Embassy, Santiago, 1984).

TABLE 4

Aggregate Value of the Health Care Sector, Chile, 1969-80

(in millions of 1980 pesos)

Year	Total	Private	Public	Private %
1969	26,708	14,089	12,619	53
1970	27,625	13,557	14,068	49
1974	21,666	11,134	10,532	51
1975	22,520	12,995	9,525	58
1976	23,019	14,210	8,809	62
1977	27,141	16,337	10,804	60
1978	29,161	18,344	10,817	63
1979	29,654	10,036	10,618	64
1980	31,709	20,945	10,764	66

Sources: Viveros-Long (1982), cited in Raczynski (1982, 75).
Viveros-Long uses data from the Banco Central (Chilean Reserve Board) and private sector earnings are taken from a national sample of private hospitals, clinics, laboratories, medical centers, and physicians.

Prepaid Group Practices

A main feature of the Chilean government's plan to reduce dependence on state-sponsored medical care has been the stimulation of prepaid group practices as outlined by Law Decree 3626. These new practices, called Provisional

Health Institutes (ISAPREs), are similar to the Health Maintenance Organization (HMOs) in the United States. HMOs' cost- and health-effectiveness have been well illustrated (Falkson, 1981). Chilean ISAPREs are organized and financed along a continuum ranging from the closed-model HMO, typified in the United States by the Kaiser plans, to the less centralized Individual Private Practices (IPAs) that enter into service arrangements with licensed medical personnel for the delivery of care by individual providers on a fee-for-service basis rather than a salaried or group practice basis (Shouldice and Shouldice, 1978, 349). Some ISAPREs operate as indemnity carriers that provide claims and payment review, marketing, and management, and assume risk for subscribers at a given level of care. Thus in a highly-structured and authoritarian regime such as Chile (Caviedes, 1984; O'Donnell, 1978). ISAPREs appear to be technical rather than political solutions to the perceived need for reducing social spending, a pragmatic view that should enhance the adoption of ISAPREs by the public (Stone, 1980).

Since the passage of Law Decree 3626 in November of 1981, employees have been able to place their mandatory monthly health care withholdings into the ISAPRE of their preference. Subscribers also incur monthly fees and, depending on the level of coverage, pay a portion of curative care charges. In light of the number of payments,

therefore, it is not surprising that ISAPREs are marketed to higher income groups who earn a monthly salary of at least 40,000 pesos (about US$ 500.00); that is to say, the upper quintile of total wage earners (Table 2). ISAPREs are necessarily selective, owing to their high operating costs. These high-income workers have few dependents and low morbidity risks (ISAPRES, 1981). The geographic location of most ISAPRE facilities, practitioners, and consumers in the high-income neighborhoods of the Chilean cities of Santiago, Valparaiso, Vina del Mar, and Concepcion, attest to the upper-income clientele that ISAPREs seek to recruit.

Although the performance of pre-paid group practices in the U.S. has been encouraging, the Chilean ISAPREs have had less success than originally expected. Since their commencement in 1981 until March 1984, only 17 practices had captured an estimated 487,000 beneficiaries (365,000 unofficially). Furthermore, the three largest ISAPREs have consistently held between 60 and 70 percent of the market share, a percentage that has been gradually declining and may signal the emergence of a more competitive marketplace (i.e., one with more suppliers) in the future. ISAPRE growth lags far behind the original estimate of one million subscribers in about 100 separate practices that were to be operational by the end of 1983 (Entrevista con J.M. Ortiz, 31 August 1981; cited in Jimenez, 1982a; FONASA, 1982).

TABLE 5

Enrollment in Provisional Health Institutes (ISAPREs), Chile, 1982-84

Month	Number of Policies	Number of Enrollees: Official	Number of Enrollees: Unofficial*	Number of ISAPREs	Share of Largest Three (%)
1982					
Sep.	85,536	255,000	--	10	76.0
Oct.	85,577	255,000	--	11	74.6
Nov.	84,996	255,000	--	11	74.5
Dec.	84,726	254,000	--	11	74.1
1983					
Jan.	84,923	330,000	254,599	11	73.5
Feb.	84,474	337,000	253,253	11	73.0
Mar.	84,809	339,000	254,257	11	71.3
Apr.	85,264	341,000	255,621	11	69.9
May	87,750	351,000	263,075	11	69.4
June	94,019	376,000	281,869	14	66.8
July	96,292	385,000	288,683	14	65.4
Aug.	99,092	396,000	297,078	14	64.6
Sep.	104,071	416,000	312,005	14	74.8
Oct.	108,524	430,000	324,213	14	60.0
Nov.	112,524	440,000	337,374	14	59.0
Dec.	115,412	462,000	346,236	15	58.4
1984					
Jan.	117,997	471,000	353,991	16	57.7
Feb.	120,685	482,000	362,055	16	57.1
Mar.	121,827	487,000	365,481	17	57.6

*In 1983 the National Health Fund (FONASA) changed the estimated number of enrollees per policy from 3.0 to 4.0. No public explanation has been given as to why this change, which increased enrollment by one-third, was enacted. Totals in the "unofficial" column are based on the original rate of three persons per policy and are presented as a basis of comparison.

Data source: Monthly reports from FONASA, September 1982 until March 1984, "Contratos suscritos," FONASA, Department of Operations, unpublished materiales.

The action taken by the government's Department of ISAPRE Coordination follows a well recommended policy course in that medical care delivery and financing in both the public and private sectors is coordinated by a central agency (Mach, 1978; Mesa-Lago, 1978). In the Chilean case, however, it appears that the ISAPREs are drawing patients from FONASA Level Three care. Public health officials contend that low enrollment in ISAPREs is due to the world recession and the low price earned by Chile's chief export, copper (Personal communication, Mr. Ernesto Tupper, 17 October 1983).

One caveat for the lesser developed nations that have uncritically adopted foreign technology and organization schemes is that programs meet the specific needs of adopting nations (Polgar, 1963). A number of ISAPREs have sought consulting services from mid-western based HMOs of the United States where the income levels, ethnic composition, and help-seeking behavior of the population are quite different from Chile. In a sense, therefore, ISAPREs may be anachronistic in Chile. They demand expensive premiums for women working in the home (housewives) who are of reproductive age. Three ISAPREs specifically reject the enrollment of dependent women (i.e., not working outside the home) under forty years of age. Still others require that all women certify that they are not pregnant. While these practices might be culturally acceptable in the United

States where prepaid medical group practices have evolved, they go against a very long tradition in Chile where medical systems have been recognized internationally for their ample provision of maternity health care programs (Meza, 1984). Traditional womens' health care programs helped place Chile among those nations with the highest percentage of female labor force participation in the formal sector (Covarrubias and Franco, 1978).

Administrative Reform and Health Policy Deliberation

To the detriment of health policy in Chile there has not been an open debate on the reforms enacted in the last few years. Experience in Israel, for example, a highly politicized nation like Chile, shows that public debate on issues of medical care and social security is a good precondition of program adoption by providers and consumers (Yishai, 1982). But the elimination of the Chilean National Health Council advisory board as well as the suspension of the national congress, political parties, and elections, has impeded discussions prior to the acceptance of health policy reforms. One Chilean physician and health services researcher noted that

> an unbalanced power is now concentrated in the Ministry (of Health) and health decisions are made by a group of persons designated by a political authority. There is no participation by an autonomous social intermediary nor, of course, does the population affected participate. (Goic, 1979a, p. 560; author's translation)

In the past, the Colegio Medico acted as a professional society with legal input in health policy matters such as fiscal allocations, fee schedules for ambulatory and hospital care, and establishing administrative organization boundaries (hospital service areas, health service districts, and rural medical rounds). This legal relationship changed in 1979 with the issuance of Law Decree 3601 which reduced the legal status of the association to a mere voluntary association. Physicians are no longer required to belong to the Colegio Medico and information on physician incomes, working conditions and other data critical to successful health care planning (Mach, 1978) are now more difficult to obtain. Physicians are forbidden from meeting in public hospitals and clinics to discuss non-clinical matters. Inputs into health policy by physicians are more narrowly represented than ever. More than two-thirds of the Ministers of Health since 1973 have been non-physicians. Information flows from the Ministry cabinet downward and, in this regard, is similar to the decision-making structure noted by Ugalde (1978) in his study of other authoritarian governments.

The Colegio Medico has argued that only the state can afford to assume the projected 1983 deficit of U.S.$ 30 million in state-sponsored curative medical care systems. Moving the Chilean health care system toward market-determined prices is seen by them as an undesirable goal

> The simple game of (market) supply and demand is equivalent to not planning human resources . . . (this in turn) distorts health care professionals, accentuating their power distribution and generating undesirable ethical problems. (Colegio Medico, 1983a, no page; author's translation)

Physicians also view the move to a more market-oriented system as the cause of their growing under- and un-employed numbers (Colegio Medico, 1983b). The proportion of medical graduates hired by the public health sector has declined three-fold between 1977 and 1982 (Table 6). Traditionally, 80 percent of the graduating medical class found work with the state, while the remainder of the class went into full-time private practice, sought specialization abroad, or emigrated (Colegio Medico, 1983b).

TABLE 6

Chilean Medical School Graduates and Positions Reserved for Them by S.N.S.S., 1977-82

Year	Number of Graduates (A)	Number of Positions Reserved (B)	(B)/(A) %
1977	528	379	71.7
1978	617	321	52.0
1979	676	319	47.2
1980	640	326	50.9
1981	596	153	25.6
1982	662	160	24.1

Source: Colegio Medico de Chile (A.G.), Consejo Regional, Santiago, Algunas Consideraciones sobre la Salud en Chile, 1 July 1984, p. 10.

One revealing trend of this substitution of physicians is that over the past decade, nurses, midwives, and medical technologists have increased within the state medical sector (Table 7) as many have assumed tasks previously done by physicians. Substituting ancillary personnel for physicians is a well recognized cost-savings measure (PAHO, 1982). But long waiting lines and crowded conditions characterize most of the sixty-six public health clinics in Greater Santiago and are the result of too few physicians in the S.N.S.S. It is common that lines form outside clinics several hours before they open (El gobierno dara un apoyo adicional al presupuesto para mejorar la atencion, 8 June 1984; Consultorios de salud, 10 December 1983). The under- and un-employment of physicians contradicts the apparent shortage of physicians in Santiago clinics and long waiting lines. Dr. Augusto Schuster, the President of the Republic's personal physician and cabinet member of the Ministry of Health, contends that the alleged "over-supply" of physicians is the result of the "university-for-all" policy of the Allende government (Marcha de capas blancas, 26 March 1980).

Limited positions in the public sector have forced a growing number of physicians into the private sector. A surrogate measure of this growth is seen by the number of private physicians who advertise in the yellow pages of the Greater Santiago telephone directory. Between 1975 and 1982

TABLE 7

Personnel Structure and Change in S.N.S.S, 1970-80

Personnel	1970 Number	1970 Ratio per 10,000 inhab.	1980 Number	1980 Ratio per 10,000 inhab.	1970-80 Change (%)
Physicians	4,401	4.70	4,128	3.78	-21
Dentists	1,140	1.22	1,752	1.58	+30
Pharmacists	321	.34	199	.18	-47
Nurses	1,666	1.78	2,509	2.56	+51
Physical Therapists	174	.19	360	.32	+107
Midwives	1,101	1.17	1,839	1.66	+42
Nutri-tionists	397	.42	612	.55	+31
Medical Technol-ogists	352	.38	854	.77	+103
Other Profes-sionals (non-admin.)	1,381	1.47	1,283	.86	-41
Total	10,933	11.67	13,563	12.20	+5

Source: Modified from Medina and Kaempffer (1982, 1004).

there was a 52 percent increase in these listings (Jimenez de la Jara, 1982b). This would seem to indicate that the private medical sector in Chile is growing rapidly. However, the number of physicians and their incomes are unknown because the Colegio Medico is restricted in gathering this information (Colegio Medico, 1983c).

Current disputes between the Ministry of Health and the Colegio Medico are significant in light of the historical importance that physicians have had in Chilean politics and the design of national health care policies. Between 1833 and 1973 there were 21 senators and representatives, one vice-president, and one president who were physicians by training prior to entering political office (Cruz-Coke, 1983). Moreover, the Colegio Medico was a catalyst in the formation of the National Health Service in 1952, the Curative Medicine Law of 1968, and in 1973 was one of the first professional organizations to call for the resignation of fellow physician and then President of the Republic, Dr. Salvador Allende (Chanfreau, 1979).

Despite the historical contributions made by physicians and the Colegio Medico in the areas of social legislation, the present government argues that neither the coverage nor the quality of health care has suffered since the outset of the "modernization" reforms of recent years. The present arrangement, in which the consumer has the right to freely elect among a greater number of systems (both public and

private) at various costs, is thought to be the best way to force providers to give better care, generate competition in the medical marketplace, and keep costs down (CDEPLAN, 1983). The FONASA system illustrates that, while it would be correct to claim that availability (number of providers) has increased, accessibility (financial) to primary care has not. As shown in the previous sections, out-of-pocket charges for FONASA patients are now greater in relative and total amounts than they were under its predecessor, SERMENA.

Evaluation Measures of Health Policy

There is a need for appropriate outcome measures of the FONASA, S.N.S.S., and ISAPREs programs. Little is known about the qualitative aspects of the municipalization program of S.N.S.S. clinics or patient satisfaction with the FONASA or S.N.S.S. delivery systems. Ideally, a health care bureaucracy of the scale found in Chile might include a department of research and evaluation. However, such operations are costly; even the expensive public health care systems of West Germany and the United Kingdom function without these departments (Etten and Rutten, 1983). One Chilean government evaluation (Ministerio de Salud, 1982) of the municipalization program of S.N.S.S. facilities arrived at favorable conclusions about the transfer of clinics to municipal administration without evaluating non-municipalized facilities as a control population (which

would have allowed statistical inferences to be employed). Patient satisfaction with S.N.S.S. facilities was reported to be very high, but the results and format of the Ministry of Health and Gallup Chile, Inc. administered survey have not been disclosed (Personal communication, Dr. Fernando Symon, 4 July 1984; see Note 3). Despite the constraint of that investigation, it was widely reported among the local news media that public health consumers were highly satisfied.[6]

Government officials argue that the effectiveness of their national health policy is proven by the drop in the infant mortality rate. They state, "Mortality is the most important indicator of quality of life and health" (Ministerio de Salud, 1983, p. 36). On numerous occasions, officials have claimed that the drop in the infant mortality rate from 65.2 in 1973 to 23.4 in 1984 is a direct health policy outcome. This argument is questionable because

1. infant mortality levels (and many morbidity and mortality indexes) lag several years behind public health program actions unless they are readily identifiable infectious diseases for which prophylaxis exists;

2. apart from medical care *per se*, it is extremely complex to sort out those medical versus non-medical factors that affect infant mortality;

3. no major changes in either the type of infant mortality or the kinds of infant and child health programs have been noted in Chile since the current

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[6] See, for example, *El Mercurio*, Chile encabeza indices en salud, p. A-3; Causas de insatisfaccion en usarios de salud, 24 March 1984, p. A-3; Encuesta de salud, 29 March 1984, p. A-3.

government took power in 1973; and

4. vital rates in nations like Chile, in the last phase of the demographic transition, are generally altered by non-medical factors (McKinlay and McKinlay, 1977).

Nevertheless, Baczynski and Cyarzo (1982) found partial support for the role that the government has played in lowering infant mortality. Their multivariate analysis revealed that state-sponsored primary care check-ups of mothers in pre- and post-natal stages was the variable that best predicted infant survival in Chile. But, as has been documented in the infant mortality literature, infant mortality responds to a multitude of other factors, particularly wage and employment conditions among non-skilled workers in the formal labor sector (Behm, 1979; de Carvalho and Wood, 1978). Another study of 92 public clinics conducted by independent consultants to the Ministry of Health revealed that maternal-infant care programs operated at levels of performance that were "less than efficient" (Borgono et al., 1983). The evaluation was based on structural variables such as staff size, materials in stock, organization and management practices, and the adherence to norms and procedures. The formidable decline of infant mortality levels has led some analysts (Haignere, 1983; Ochoa, 1978) to speculate that public funds may continue to be reduced should infant mortality remain low. Free infant and child food supplements have been found to be highly correlated with infant survival (Solis et al., 1982;

Castillo et al., 1982). On the one hand, the per capita daily consumption of protein was estimated to have fallen from 80 grams in 1972 to 62 in 1978 (Mardones-Santander, 1981). On the other hand, the Chilean government has kept distributional levels of infant and child nutritional supplements constant during its twelve year tenure.

Morbidity and Quality of Life

Other assessments of Chile's health care policy emphasize non-medical factors affecting the health status of the Chilean population. Medina and Kaempffer concluded that the

> efficiency of medical care has been helped by an increase in the number of people living in urban areas and by the improvement in basic instruction, health education and sanitation. (1982, 1004)

The claim that infant nutrition programs in Chile are determinants of infant mortality decline has been challenged. Hakim and Solimano (1978) argue that despite popular media support linking infant programs with low levels of infant death, poor quality water and storage facilities impede the efficiency of infant nutrition programs. Moreover, factors other than health policy actions per se (increases in female educational levels, water and sewage treatment) have helped lower infant mortality.

Clearly, the quality of health status, therefore, needs to be assessed by the use of morbidity as opposed to mortality indexes. Foxley and Raczynski have made this

theme a major focus of their study of social groups that are vulnerable in the perils of Chile's current economic recession.

> Actually, it is a known fact that in nations where the risk of death has diminished constantly and where, in addition, there is a health recovery system covering majority percentages of the population, mortality levels cease to be a suitable indicator of the nation's state of health and susceptibility to disease. In fact, they only reflect the ultimate outcome, that of dying. (1984, 231)

That morbidity is a more pertinent index of the health status of a population is noted by the increase in typhus and hepatitis (Figure 7). Infectious diseases of this sort afflicted Chile at a much earlier period of its economic development (Viel, 1961). Chile now possesses 25 percent of all typhoid cases in the Western Hemisphere (Colegio Medico, 1983a) but has less than two percent of the population. Epidemiologists have suggested that the high levels of typhoid fever are attributable to the reduction in the number of inspections of food establishments. During the time when there was an increase in typhus and hepatitis cases in Santiago and the rest of the nation (Figure 7), a marked reduction in the number of food inspections by health officials from 124 in 1974 to only five in 1981 was recorded (Medina and Yrarrazaval, 1983).

Heavy flooding in 1982 and 1983 due to El Nino climatic disturbances brought about, in part, a rise in infectious diseases propagated by contaminated water. During this time

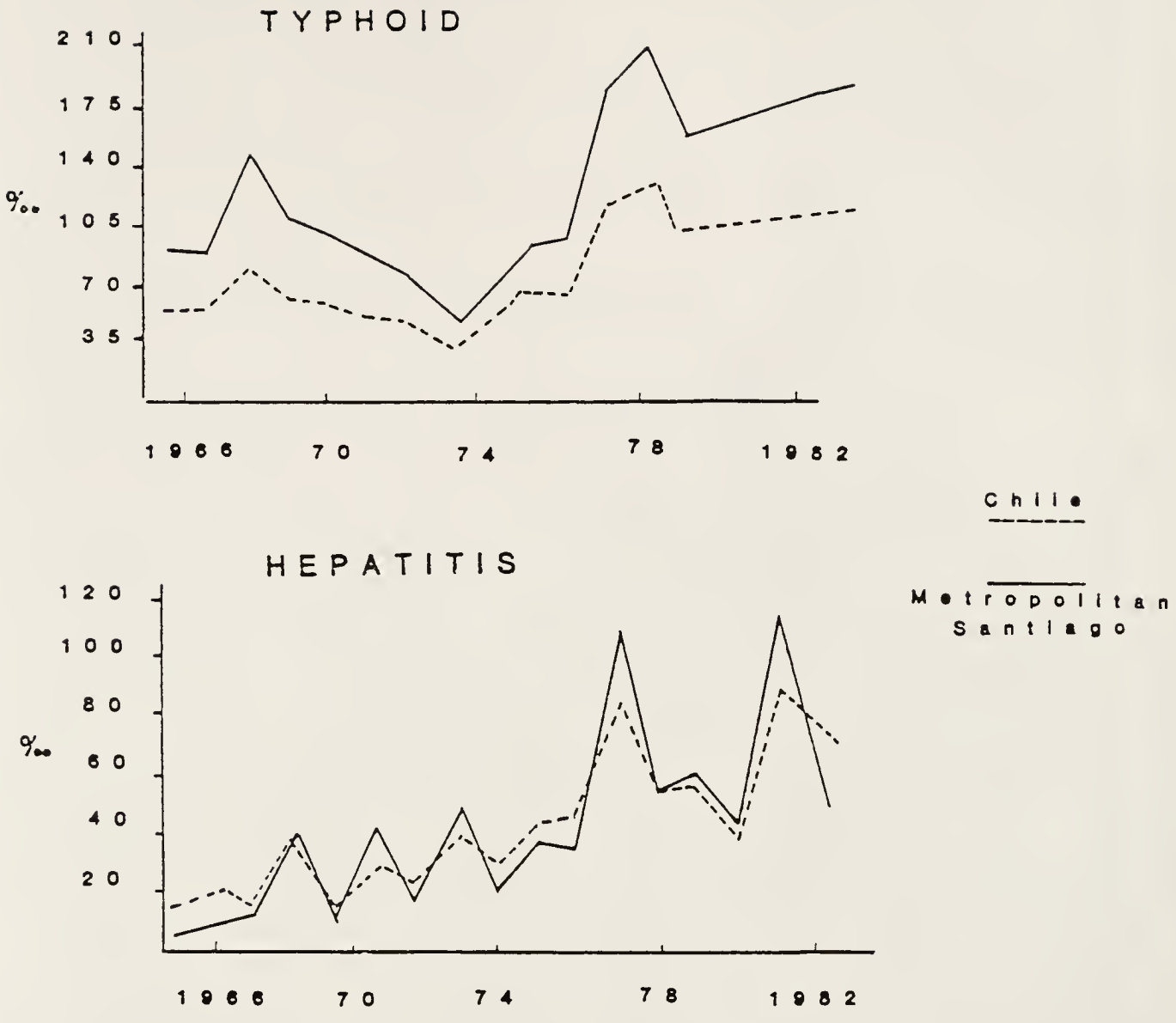

Figure 7: Typhoid and Hepatitis Rates, Chile: 1966-82

Source: Colegio Medico (A.G.), Consejo Regional, Santiago. Algunas Consideraciones sobre la Salud en Chile. 1 July 1984, p. 34.

the ministries of public works and housing intensified their campaign to "make healthy" (sanear) the squatter settlements of Greater Santiago. Although this process entails connecting homes to the central sewage system (Haignere, 1983), raw sewage from the 4.4 million inhabitants in Greater Santiago is still discharged directly into the Mapocho and Maipu Rivers without passing through even primary treatment. Small agriculturalists downstream use the contaminanted effluent to produce about 47,0000 tons of such vegetables as such short-cycle crops as lettuce, cabbage, celery radishes, and parsley (Servicio Salud Ambiental, 1983, 44). Only two officials from the Environmental Health Service of Greater Santiago spend eight hours weekly field inspecting 2,128 hectares for small farmers who use contaminated water for field irrigation. When agriculturalists are found using the contaminated water, they are given 90 days to cease the operation (Personal communication, Ms. Magdelena Iriondo, 27 June 1984). Meanwhile, farmers are allowed to harvest and bring infected crops to market, and some crops like parsley are harvested twice in that time. Consumers are encouraged to take preventive measures by disinfecting vegetables with a fairly costly commercial chemical, less expensive detergent bleach, or soap and water. The Ministry of Health does not subsidize farmers for destroying contaminated crops even though benefit-cost studies have not assessed the trade-off

between cash subsidies and labor productivity losses by workers who are infected by hepatitis or typhus (Personal communication, Dr. Fernando Symon, 4 July 1984). Faculty at the School of Public Health of the University of Chile (Personal communication, Faculty of the Department of Hospital Administration, May, 1984) recognize that the government is reluctant to purchase infected crops because of its defined role as a subsidiary agent in the course of social development (ODEPLAN, 1983). It is likely that a least-cost preventive strategy of secondary water treatment and crop subsidy would enhance public health.

Summary and Conclusion

The formulation of public health policy and the task of striking a balance between private and public health care financing are well illustrated by the Chilean case. Providing affordable medical care at an acceptable level of quality, while maintaining fiscal solvency, is a priority in many countries. The private-public health care debate in Chile has surfaced after 60 years of strong public health care funding. The evidence reviewed suggests that the private sector will not be able to drive costs down through competition and thereby absorb users from the public sector. The promotion of a market-oriented health industry in Chile has brought greater out-of-pocket payments for consumers and has been accompanied by a resurgence of infectious diseases

that afflicted Chile during an earlier period of its economic development.

Redefining the state's role in health care financing has been accomplished by a number of statutory reforms. These reforms have allowed the state to relinquish some responsibility in the health care sector as it breaks its traditional allegiance with the electorate, political pressure groups, and unions in granting health care services. Employers and middle- and upper-income consumers have mostly financed the pension fund schemes (AFPs), prepaid group practices (ISAPREs) and have contributed greater out-of-pocket payments. The guiding ideology behind the changes in health care financing in Chile has been to privatize part of the public household. This move seeks to throw back the boundaries of the political apparatus and to return some government duties to the private sector. The case for more out-of-pocket payments in health care financing rests on the grounds that the government is incompetent in service provision and the traditional welfare state is difficult to manage. Public monies tagged for health care, it is argued, dampen private investment.[7]

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[7] Although the changes that have been enacted in Chile are far more sweeping than the health and social policy changes in the U.S., the similarities are evident. See the final chapter of Starr, Paul, The Social Transformation of American Medicine. New York: Basic Books, 1982; especially pp. 417-19.

Evidence from the first few years of the restructured health care system point to three main conclusions. First, the expansion of the newly developed private sector is falling short of original estimates. ISAPREs have captured less than one-third of their projected enrollment figures. Pension scheme monies will soon be invested in state venture-capital operations that have dubious future success. Public health clinics have been leased to municipal managers in some Santiago municipalities, but a fixed ceiling placed on reimbursements during the first year of the program restricts most municipalized clinics to middle- and upper-income areas. Second, more careful evaluation of health policy outcomes is needed so that short- and long-term changes in health levels can be monitored. It was argued here that infant mortality declines over the last decade are more likely to be the result of non-medical factors than of state-financed health programs. In gauging health status, attention was called to mortality measures of typhus and hepatitis as well as the need for civil engineering projects, against strictly medical care. Lastly, that Chile has been a pioneer in state-financed health care will draw attention to the impact of its restructured system. Member nations of the Pan American Health Organization and developing nations in Africa and Asia could learn much from careful studies of the Chilean experiment, as they too deal with external debt problems. Although Chile falls short of

meeting the PAHO goal of two medical visits per person annually, it has lowered infant mortality below 30 deaths per 1,000 live births well in advance of the year 2000 goal (Chile cumplio todas sus metas en salud, 7 November 1983; Ministerio de Salud, n.d.). The Pinochet regime would have a model of health care administration worthy of emulation among developing nations if the public sector can further reduce the proportion of public funds without compromising the quality of life.

CHAPTER III
MEDICAL CARE INFLATION IN CHILE, 1979-83: ITS IMPLICATION FOR ECONOMIC ACCESSIBILITY

Introduction

The prolonged economic crisis of the last decade has imposed special social costs on all nations and nowhere has this stress been more acute than in providing affordable medical care. Rising inflation has thwarted efforts to hold medical costs steady. Some analysts have argued that a fiscal crisis afflicts all nations and that the public sector is unable to fill the void where private sector funds cannot or will not be placed (O'Connor, 1973). Others remain optimistic about the private sector's ability to create competition under free-market conditions which will ultimately drive medical costs down (Friedman and Friedman, 1980).

Little cross-national research has addressed the determinants of health care inflation for several reasons. The diversity of administrative and financial structures makes comparison difficult. The proportion of state and private sector funds allocated to medical care varies markedly among nations, thus further impeding international comparisons. However, a common feature in assessing health

care inflation is the practice of indexing (Newhouse, 1982; Feldstein, 1983; Jud, 1978; Friedman, 1974).

Use of annual variations in the Consumer Price Index (CPI) is one approach in assessing rising costs in national economies. The Medical Consumer Price Index (MCPI) in particular allows health researchers to examine variation in purchased medical goods and services over time, thus providing specific insight into the complex workings of the medical market. One caveat in the use of the MCPI is its failure to keep pace with technological changes and the ensuing revisions in products and services. Another drawback of indexing and MCPI fluctuations is that they represent purchased as opposed to consumed medical goods and services. This chapter combines MCPI data from the National Statistics Institute (INE) in Chile as well as two national surveys carried out in 1983. In so doing, the interrelationship between purchased and consumed medical items is better understood. Specifically, the main objectives of this chapter are

1. To measure how the medical consumer's purchasing power (a function of the Index of Wages and Salaries) is related to changes in the Chilean MCPI.
2. To determine whether two major theories of medical care inflation in in the United States are pertinent to the Chilean case.

3. To review the major types of health care expenditures in Chile (primary care, dental care, etc.) and compare their relative distribution with the weightings alloted them in the CMPI.
4. To discuss the trends of health care inflation in Chile in the context of national health policy and its effect on the relative accessibility of medical care.

The first section of the chapter reviews the major factors that contribute to health care inflation in the industrialized developed nations as a backdrop to the Chilean experience. The comparison between Chile and the developed realm is not as inappropriate as may seem at first glance. The Chilean medical system has virtually 100 percent coverage through its various state- and private-financed delivery systems. Chile has been a pioneer in state-financed medical care throughout most of this century and only recently has there been a sizeable retrenchment of public monies in the health sector. A second reason for comparing Chile with the developed nations is the paucity of research on health care inflation in the developing nations (Lee and Mills, 1983).

The second section follows the evolution of the Chilean MCPI and CPI over the study period, 1979-1983. This study marks the outset of major changes in the performance of the

nation's economy as well as the health policy changes that were described in Chapter II. The impact of medical care inflation is assessed by means of the real costs incurred by Chileans based on surveys of their consumption of medical goods and services.

Medical Care Inflation in the United States

The rise in the cost of medical care in the United States in the 1970s and 1980s has been well documented. In general, it appears that half of the increase in medical care inflation has been due to price hikes and the other half reflects the combined effect of greater utilization and population growth (McCracken, 1984). The increase in the cost of medical care moved with rising demand and this combined effect was further exacerbated by greater costs for ancillary services.

The study of medical care inflation in the U. S. can be approached by two general models. The first, demand-pull inflation, contends that consumers buy greater amounts of medical goods and services than existing supplies. Inflation results when supplies do not increase. A second interpretation of medical care inflation is often referred to as cost-push inflation. In this context both wages and input prices increase and the outcome is higher health care costs to the consumer and third parties. The "fuel" that drives cost-push inflation is often the threat of

unionization that locks wages into automatic cost of living hikes (Feldstein, 1983, 234-237; Sorkin, 1976).

Because hospitals consume the largest portion of the medical dollar (42 percent) in the United States (Profitable American Hospitals, 18 May 1985), most research has focused on hospital performance in the marketplace. Increases in U.S. hospital costs can generally be attributed to at least three factors. First, since hospitals are labor intensive operations, wage and salary increases must be added to the cost of medical care. When consumer wages increase, greater utilization of medical care is often triggered by consumer choice or by the inducement of additional medical procedures by physicians. Both mechanisms spur higher medical costs when supply cannot respond accordingly. Second, medical insurance programs dictate reimbursement levels. Hospitals try to keep their costs under these fixed levels so that the differences between reimbursement by third party providers and real costs can be absorbed by the consumer. Obviously, treating patients at lower costs than levels established by third parties (e.g., Medicare, Medicaid, the Blues, and commercial carriers) signifies profit for the hospital. Finally, the relative high supply of physicians, especially non-generalists, and other health professionals delivering service affects the total cost. Manpower shortages will drive the cost of medical care up as will the level of specialization among health professionals. Although

physician opposition to physician assistants, midwives and other personnel has been strong and may impede fair comparison, there is thus far little evidence to suggest that the substitution of physicians for ancillary personnel has helped to bring down medical costs on a major scale (Schweitzer and Record, 1977).

Medical Care Inflation in Chile

Chile has long been plagued with high inflation in the general economy. The nation's dependence on a few mineral resources (nitrates and copper) throughout its independence period (post-1833) has left it susceptible to "boom and bust" cycles (Davis, 1963). Since the 1950s, Chile, like many of its Latin American neighbors, has been experimenting with indexing (Jud, 1978). Indexing allows the national economy and certain industries to be monitored. The socialist government of Salvador Allende (1970-73) faced a strained economy with an annual inflation rate of 750 percent. Despite efforts by the current regime to dampen inflation, its annual increase averaged 250 percent between 1970 and 1978 (The World Bank, 1980, 11). For the last 12 years, the Chilean military regime has curtailed social spending, in part, to lower the rate of inflation.

Health Policy Change and Medical Care Inflation

Health policy has been altered in three significant areas since the outset of the current regime in 1973. First, there has been a sharp reduction in social spending (health, education, housing) which, in the health sector, was translated into more out-of-pocket charges. Middle-class medical programs such as the National Health Fund (FONASA) require relatively more private funds than did its predecessor program, SERMENA, which operated until 1979. Second, a major effort has been made to enroll middle- and upper-income wage earners into private pre-paid medical practices, ISAPREs. This reform is part of the free election system (sistema de libre eleccion) that has been a central feature of the free-market economy of the current regime. A third aspect of recent policy changes has been the transfer of public health clinics (consultorios) which generally provide care to indigents and blue-collar workers (obreros), to county management. As discussed in the previous chapter, this "municipalization" process is an effort to reduce state bureaucracy and state-financed care by allowing local authorities to provide care according to the needs of the local community. Primary and secondary care facilities have been turned over from the national government to municipal management in selected areas of the country. A private management system now operates the Central Health District of Metropolitan Santiago and is the

only one of five districts in Metropolitan Santiago to report a profit in recent years. In brief, the military regime has enacted a number of measures to reduce state-financed medical care with a concomitant effort to increase out-of-pocket payments from medical care consumers. These changes portend more efficient medical care supply and utilization.

Possible Causes of Medical Inflation in Chile

This section reviews briefly the causes of medical care inflation in the United States identified above, as they apply to the Chilean case at hand.

Real income in Chile has declined by 15 percent over the last decade (Cortazar, 1983). Within the health care sector, there has been no threat of unionization nor have major wage concessions been granted to public health workers in Chile under the current regime. The National Health Service System (S.N.S.S.) employed fewer physicians in 1980 than it did a decade earlier (Medina and Kaempffer, 1982). The bargaining power of physicians was greatly reduced in 1979 when the government changed the legal status of the Chilean Medical Society (Colegio Medico). Traditionally, the association had legal input into wages paid to all medical personnel. At present the Ministry of Health and the S.N.S.S. set all wage levels. Figure 8 shows that dental and physician wages have consumed about the same

proportion of the S.N.S.S. budget over the last ten years. This trend in professional earning power can be interpreted in very general terms as a surrogate measure of physician wages and salaries. Because most Chilean physicians work part-time with the S.N.S.S. or some public-affiliated medical system, the trend in earning power can be generalized from Figure 8. It will also be recalled from the last chapter that both the absolute number of S.N.S.S. personnel and public funds in the health sector have declined over the last decade (Tables 7 an 4 respectively). Therefore, if it is a valid assumption that physician wages have not increased sharply so as to spur on inflation, then the Chilean case contrasts sharply with inflation in the U.S. medical sector, where physician salaries in the U.S. have increased by about 200 percent between 1970 and 1980 as a result of increased insurance coverage (Burstein and Cromwell, 1985, 65).

A second element that has been identified in the U.S. is the growth of new medical insurance programs such as Medicaid, Medicare and the "Blues" programs. It has been suggested that prior to 1983 these third-party finance schemes did not deter health care providers from ordering excessive procedures because of their cost-based reimbursement approach. The major new medical care financing program in Chile is private pre-paid medical practices. To date, these plans have fallen short of their

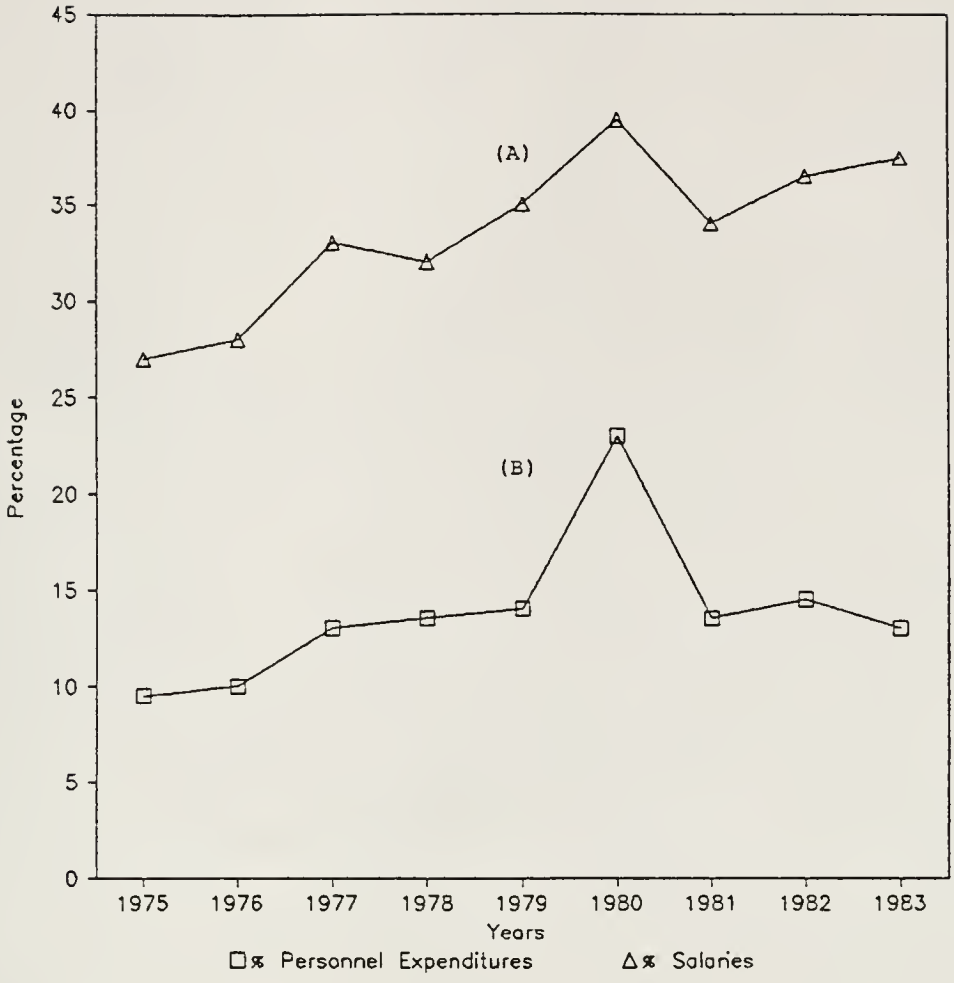

Figure 8: S.N.S.S. Physician and Dentist Salaries, 1975-83

(A) Defined as physician and dentist salaries divided by all salaries and wages. Denominator excludes seniority pay.

(B) Defined as physician and dentist salaries divided by all personnel expenses. Denominator includes wages, seniority pay and bonus pay for accepting rural assignments. Data Source: Balance Presupuestario al 31 de Diciembre, 1975-1983. Santiago: SNSS.

original goal of one million subscribers by 1984; as shown in the previous chapter, estimates indicate that about one-third of that enrollment has been reached. However, even though growth has been slower than expected, there is no evidence to suggest that private medical care costs have accelerated markedly. On the contrary, the MCPI item "private primary medical care" and "private hospital/clinic stay" show the smallest increases over the five year period (Figure 9).

Although new medical insurance programs have not developed, the withholding of Chilean wages for medical care has increased in the 1980s. Monthly wage withholdings are a major source of health care financing in Chile. These withholdings (cotizaciones) are directed to the medical plan of the consumer's choice. In 1982, this deduction was at 4 percent of gross wages and increased to 5 percent in 1983 and to 6 percent in 1984. These monthly deductions are "purchased" whether or not "consumed" and are not reflected by the MCPI; thus providing one difference between purchased and consumed medical care.

Lastly, it was noted that the utilization of new medical technology might be responsible for transfering higher costs on to medical consumers in the U.S. One gross indication of that is the diffusion of CT scanners. The Chilean medical market is not yet a highly capital-intensive one. Jorge Jimenez de la Jara (1982a) noted that in 1982,

Figure 9: Annual Variation of ECPI, Selected Items, 1979-84

*Denotes December 1983 to March 1984 change only.

only five scanners were present in Chile, and none were in the public sector. The author of this research estimates that about ten scanners operated in Chile as of late 1984, of which, one was in the public sector.[1] Little evidence suggests that the utilization of medical technology in Chile is likely to be a significant factor in escalating medical care costs, if only because of the scarcity of this kind of equipment.

Summing up, the data reviewed thus far in the chapter show that the relative price and availability of medical goods and services has increased, particularly in the public sector. The determinants of medical care inflation in the United States are not demonstrated in the Chilean case. Rather, the hypothesis presented here is that the structural causes of medical care inflation in Chile are the result of health policy changes that have shifted the burden of more out-of-pocket charges to middle- and upper-income consumers. More empirical evidence for this claim is presented in the following section.

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[1] It is difficult to cite specified population:resource ratios for the use of CT scanners and other medical equipment even in the U.S. where these resources are common. One estimate in determining equipment levels is the number of procedures per 1,000 inhabitants. This crude estimate, derived by the Leonard methodology, was 4.35 for the North Central Florida region (Personal Communication. Letter from J.N. Gregg, 22 May 1985, North Central Florida Health Planning Council).

Methods and Findings

As noted above, changes in the MCPI provide only partial insight into health care inflation. Although the amounts of state and private funds directed to health care as well as the rate of inflation are useful data, analyses are confined to generalizations about the hypothetical purchase of certain medical goods and services, as opposed to their actual consumption. To bridge this gap, this assessment of medical care inflation will draw on index measures of the medical care sector and the national economy as well as two household surveys on medical care utilization and expenditures among different income and medical program groups.

Trends in the annual change of the Chilean CMPI, CPI and Index of Wages and Salaries (IWS) are shown in Table 8 for the 1979-83 period. In the first three years medical care inflation surpassed national inflation (Table 8, line 2). These differences reversed in 1982 when the CPI outpaced the CMPI.

The relationship between the CMPI and the IWS was next considered to see how medical care inflation compared with changes in the medical care consumer's purchasing power. A ratio of the two measures (wages and expenses) was used to derive an Index of Medical Care Purchasing Power (IMCPP). This measure is more sensitive than the difference between the CPI and CMPI (Table 8, line 3) because it relates

TABLE 8

Medical Care Inflation and Consumer Purchasing Power

MEASURE	YEAR 1979	1980	1981	1982	1983
1. Consumer Medical Price Index (CMPI)	69.45	33.19	23.66	16.52	22.36
2. Consumer Price Price Index (CPI)	38.90	31.20	9.50	20.70	4.00
3. CMI-CPI	30.55	1.99	14.16	-4.18	-0.74
4. Index of Wages and Salaries (IWS)	53.20	36.54	20.60	5.10	18.00
5. Index of Medical Care Purchasing Power (IMCPP=IWS/CMPI)	153.2/ 169.5	209.7/ 225.7	252.1/ 279.1	265.0/ 325.2	326.2/ 398.3
IMCPP	0.904	0.926	0.903	0.815	0.819

Data source: Institutc Nacional de Estadisticas (INE). Department of Prices, unpublished materials, Santiago, Chile.

medical care inflation to consumer purchasing power. The IMCPP (Table 8, line 5) is calculated following the Laspeyres price index; when the index is less than unity (1.00) the consumer is worse off in the given year (Hirschleifer, 1976, 145).

The medical care consumer in Chile was increasingly worse off between 1978 and 1983. The IMCPP shows a gradual worsening in the consumers ability to keep pace with rising prices in medical services and products. Both an increase in the MCPI and a drop in the IWS made medical care less accessible. A 1983 IMCPP value of 0.819 means that consumers lost about one-fifth of the medical care purchasing power they held in 1978, the base year of the index.

Household survey data from 1983 gathered by the Latin American Institute of Social and Doctrine Studies (IIADES, 1984) were used to assess the actual level of medical care expenditures and medical care utilization among income groups. Figure 10 shows the proportion of ambulatory care visits for 441 persons in Metropolitan Santiago. A strong and positive correlation exists between the frequency of ambulatory visits and income (Spearman's rank correlation coefficient=.9707). This is the expected relationship in economies like the U.S. where out-of-pocket payments and insurance coverage is tied closely to income levels. However, the strength of the relationship is unexpected in a

country like Chile where medical care accessibility has not been traditionally hindered by consumer purchasing power. However, it is consistent with the structure of three-tiered services like FONASA.

To consider medical care expenditures among different private and public medical programs in Greater Santiago, survey results from a Gallup Chile-University of Chile School of Public Health study were used (Medina, n.d.). Table 9 presents the distribution of health care expenditures for users of different programs (n=2,820). Total health care expenditures are shown in proportion to average per capita income as well as type of health care cost (primary medical care, dental and total). A striking feature of the data is the high proportion (48 percent) of health care costs directed toward dental care (Table 9, Column E). The nearly one-half of all health care expenditures for dental expenses is disproportionate to to the 16.11 percent allocated to this category by the Chilean CMPI.

In contrast to the information in Figure 10 showing the strong correlation between primary care utilization and income, no such relationship is apparent among income level and the proportion of incomes devoted to health care. In this case, Spearman's rank correlation coefficient shows that there is no such relationship at the 95 percent confidence level (Table 10). The absence of a strong

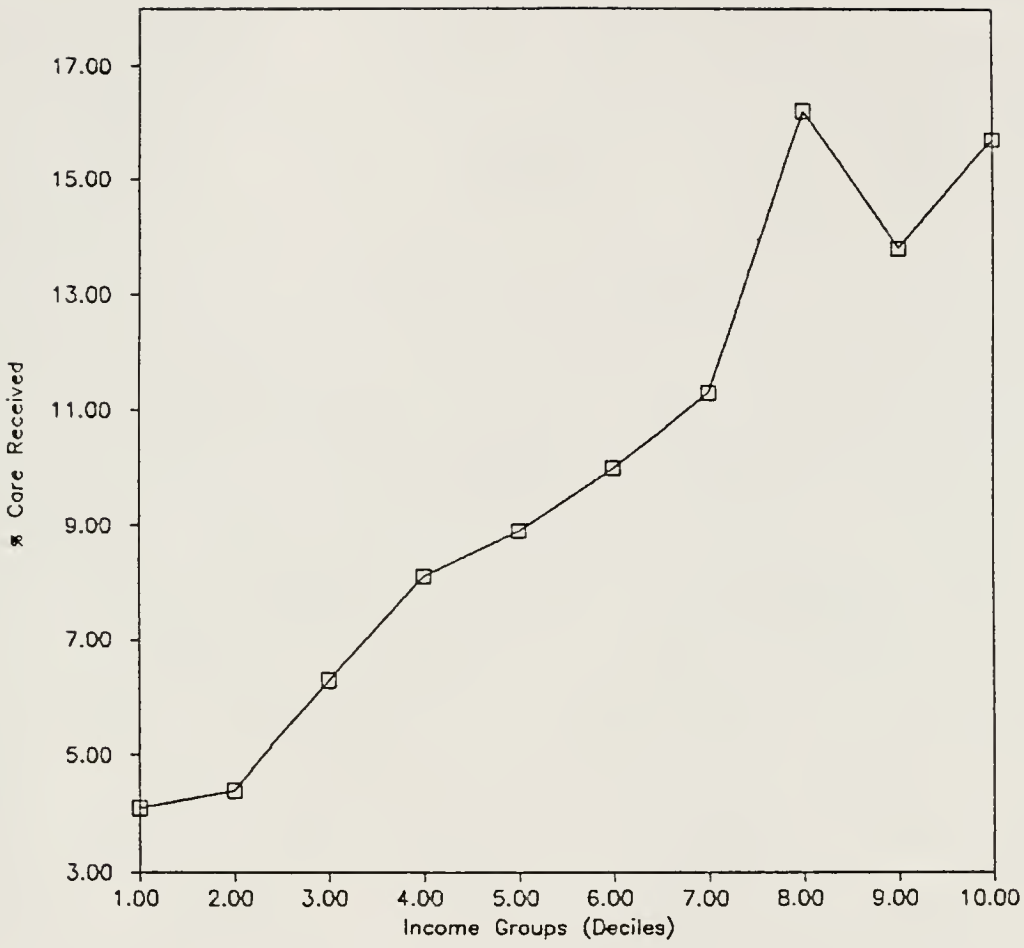

Figure 10: Ambulatory Care Visits by Income Group, 1983, (n=441)

Data source: ILADES, unpublished SPSS computer print out, April 12, 1984, Santiago, Chile. Spearman's rank correlation coefficient calculated by the author.

TABLE 9

Per Capita Health Care Expenditures ($US) by Program, 1983

Med. Progr.	P.C. Income A	P.C. Health* Care Exp. B	% B/A C	P.C. Dental Exp. D	% D/A E	P.C. Prim. Med. Care Exp. F	% F/A G
ISAPREs@	1,735	88	5.1	24	27.3	26	29.5
Private Doctor	1,061	262	24.7	200	76.3	32	12.2
Doctor Friend	1,099	165	15.0	97	58.8	13	7.9
Armed Forces	748	427	57.1	104	24.4	16	3.7
FONASA@	555	198	35.7	80	40.4	37	18.7
Other Public	391	172	44.0	24	14.0	12	7.0
SNSS	189	31	16.4	10	32.3	1	3.2
Average	439	132.5	30.2	63	48.0	14.5	11.0

*Includes primary medical care, hospitalization, pharmacy purchases, and dental care.

@Excludes monthly payments to public or private program.

Source: Medina, n.d., Table 33.

relationship between income and cash disbursements for dental, primary, and other health care services, suggests that other costs in the form of health care withholdings and health insurance premiums are at play.

TABLE 10

Income and Selected Health Care Expenditure Correlations

Type of Expenditure	Spearman's Rank Correlation Coefficient
Primary Medical Care	.643
Dental Care	-.452
All Health Care	.357

(P<.05).

Correlations calculated by author.
Data Source: Table 9.

A further refinement in the study of the relationship between real expenditures and the medical care systems was sought by selecting a medical system that is representative of high, middle and low income groups. By focusing on just three medical programs, the differences among income levels and health care expenditures can be emphasized. Private medical care programs (ISAPREs, Private Doctor, Doctor Friend), FONASA and SNSS programs were selected from Table 9

to represent the high, middle and low income groups respectively. These programs are representative of the three income ranges and represent approximately 80 percent of all Chilean medical care consumers (Scarpaci, in press A).

Household survey data on the number of program affiliates who incurred costs and those who did not incur costs were taken from the Gallup-University of Chile study of Greater Santiago (Medina, n.d). A null hypothesis stating there is statistical independence in incurring health care costs was tested. In other words, incurring health care costs is not a function of medical program affiliation in Chile. A Chi-square test measured whether there are significant differences among selected users of various Chilean medical systems (Table 11, Panel A). Members of the three medical programs were assigned to one of two categories: Those that incurred some medical cost and those that received medical care without payment at the time of delivery. No measure of the amount of cost incurred was included in the Gallup-University of Chile survey. A Chi-square measure of 131.4 from a test of the three groups exceeded the critical level of 13.81 ($p<.001$) (Table 11, Panel B). Similarly, tests between FONASA and S.N.S.S., and FONASA and the private practices, showed that significant differences exist. Accordingly, the null hypothesis was rejected. The alternative hypothesis that the incurment of

cost is not a random process was accepted. It is concluded that medical program affiliation in Chile, which is closely bound to income levels, has some bearing on incurring medical care costs.

TABLE 11

Chi-square Test of Health System Affiliation and Incurring Costs, Chile, 1983

A)

	Number of Affiliates in Sample			
Incurred Costs?	S.N.S.S.	FONASA	Private*	Total
YES	71	43	89	203
NO	115	13	24	152
Total	186	56	113	355

Data source: Medina (n.d., p. 37, Table 32). Costs include ambulatory, dental and hospital care, and pharmaceutical purchases.
*Private care includes private medical centers, solo practitioners, ISAPREs, and physicians who are friends.

B)

	Chi-square Results	
Health Systems Tested	Chi-Square	Critical Region#
S.N.S.S., FONASA and Private Sector	131.43	13.82
S.N.S.S. and FONASA	93.23	13.82
FONASA and Private Sector	79.86	13.82

#Significant at $p<.001$.

Summary and Conclusion

This chapter has combined national-level data from the National Statistics Institute of Chile and two 1983 household surveys of health care expenditures and utilization in assessing the differential impact of health care costs and inflation on consumers. At the national level it was found that although medical care inflation stopped rising faster than the CPI in 1982, wages and salaries failed to keep pace with the prices of medical services and products (CMPI). Medical consumers lost about one-fifth of their purchasing power between 1978 and 1983.

Neither the demand-pull nor the cost-push theories of medical care inflation adequately account for medical care inflation in Chile. Rather, the data analyzed here support the argument that health care policies in Chile have established the legal framework for the financing of both public and private medical programs, have forced more out-of-pocket payments from consumers to acquire the same utilization levels. The relative cost of medical care has increased while consumer purchasing power has decreased by about one-fifth of its 1978 levels.

Moving beyond the national level, the analysis then turned to realized medical care costs in Greater Santiago. Household survey data from 1983 revealed several important relationships. The utilization of primary medical care is strongly and positively related to income levels. This is

congruent with the general literature on the the utilization of medical services in the United States (Shortell, 1980). Moreover, this finding suggests that Chilean health care policies are moving toward more personal financing and less state subsidy in the delivery of medical care. About one-half (48 percent) of all health care expenditures among those surveyed were for dental care (Medina, n.d.). Because consumers in a variety of international settings frequently curtail dental care in times of economic hardship or when other medical needs are pending (Kohn and White, 1976), it can be concluded that latent demand for dental care in Chile is both unmet and strong, or that it is a status symbol or a superior good.[2]

More refined survey data are needed to identify differentials in total health care expenditures among income groups. The data reviewed here indicate that health care is costlier for middle-income groups in FONASA than for lower- or upper-income users in the SNSS or ISAPRE programs respectively. Part of this increased cost for FONASA users is evident by the increases in health care withholdings from 4 to 6 percent in recent years, and the cost of medical vouchers (Figure 9). Future research should consider the cost of premiums and withholdings in assessing medical care costs in Chile and whether consumers actually "sense" the

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[2] The author observed that working-class Chileans had more gold dental work than the non-working class. The use of gold in dental protheses is common in Chile and is likely to be considered a superior good among some groups.

loss in wages and salaries. In the U.S. there is evidence that most consumers are insensitive to certain increases in premiums (McCracken, 1984).

This chapter has measured the differential costs of medical care and medical care inflation in Chile in recent years and its findings underscore the deleterious impact that health care policies and medical care costs have had on the Chilean consumer. Unless policy reform shifts the financial and temporal costs of medical care from middle- and low-income groups to the State, the disparities in utilization will likely widen.

CHAPTER IV
HELP-SEEKING BEHAVIOR OF THE URBAN POOR IN SANTIAGO: CULTURAL AND ORGANIZATIONAL ASPECTS OF MEDICAL CARE ACCESS

Introduction

This chapter analyzes public-financed primary medical care in Santiago and identifies the determinants of consumer satisfaction and utilization of health care among a sample of the urban poor. In so doing, the work provides one evaluation of the medical care delivery system in Chile and the help-seeking behavior of the urban poor. A representative sample of 140 users of primary medical care[1]

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[1] Given an estimated service population of 35,000 users, the selection of a representative sample is as follows

$$n_o = t^2 pq/d^2$$

where:

n_o = estimate of sample size

t^2 = the number of standard errors within which lie the confidence intervals

p = proportion of population having one characteristic

q = proportion of population having the second characteristic

d^2 = the acceptable error limit

Since the number of residents who rely on Villa O'Higgins as a regular source of care is not known, the sample is

was taken from the S.N.S.S. operated Villa O'Higgins clinic in southeastern Santiago (Figure 11). Patients were administered a structured questionnaire for about 15 minutes after they met with one of four primary care physicians. The patients interviewed were told that the interviewer was an independent researcher who was not affiliated with the S.N.S.S. The questionnaire (see Table 12 for variable list and Appendix I for the original Spanish-language questionnaire) was administered in the Chilean spring (November 1983), a season when the weather is moderate and its influence on health status is minimal (Medina, n.d.).

Divided into four major sections, the chapter begins with an overview of the administrative and social context of the Villa O'Higgins clinic. The next section presents the socioeconomic profiles of users anddescribes their passage through the medical care system. The section consists of four separate but related subsections: 1) individual and

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maximized by setting the proportion to 50 percent. Applying the formula is as follows:

$$n_o = 1.96^2 (.50 \times .50)/.085^2$$

$$n_o = 3.84 (.25)/.00723$$

$$n_o = .9604/.00723$$

$$n_o = 132.84$$

Thus a sample of 133 patients was selected at the 91.5 percent confidence level.
See G. E. A. Dever, Community Health Analysis, Baltimore: Aspen, 1980, 152-54.

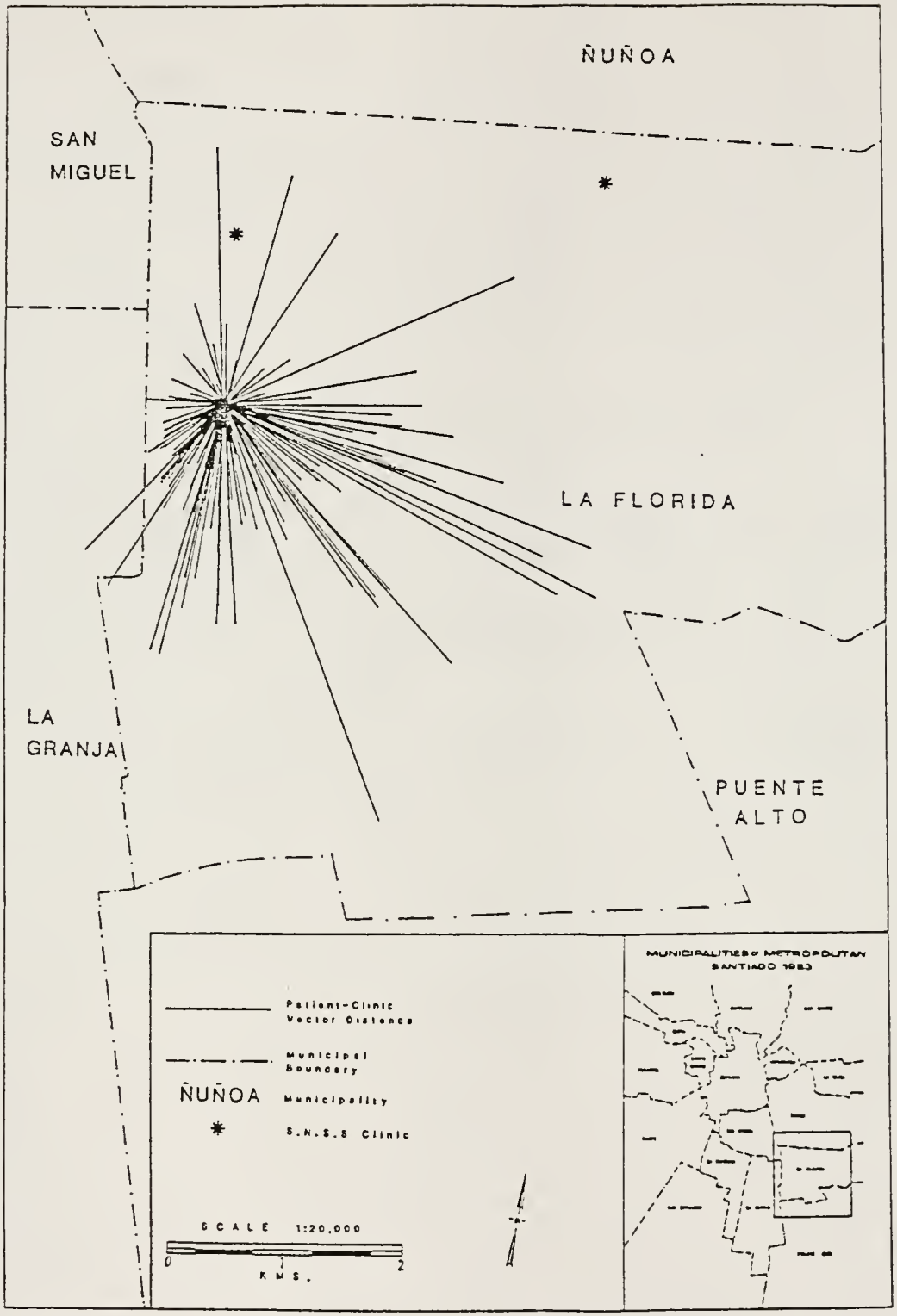

Figure 11: Distance Vectors Between Residences and Villa O'Higgins Clinic

TABLE 12

Questionnaire Variables

Label	Definition	Measurement
ABLEMEN	Males over 14 not studying	interval
ABLEMWOM	Women over 14 not studying	interval
ADULTS	Number of adults in household	interval
AGE	Age of patient treated	interval
CLINBAR	Clinic-imposed difficulties	nominal
CLINCAMB	Clinic changes in last 5 years	interval
CLINLIKE	Liked anything about clinic	nominal
DISLIKE	Disliked anything about clinic	nominal
DEPRATE	Young + old/household size	interval
DOCPREF	Prefer private doctor	nominal
DOCSELEC	Able to see preferred doctor	nominal
DRUGTEST	Receipt of drug or test cited as reason for care evaluation	nominal
FARMUSE	Use of pharmacy	nominal
FEMHEAD	Female-headed household	nominal
FEMINFOR	Women in informal sector	interval
FOODEXP	Household monthly food expense	interval
FOODPER	Food expenditures per person	interval
GOODCARE	Doctor-related attribute in appraisal of care	nominal
GOTDRUG	Receipt of drug-test at clinic	nominal
HERBUSE	Uses herbal remedies	nominal
HOSPITAL	Ever attended at hospital	nominal
HHSIZE	Household size	interval
HHMOINC	Household monthly income	interval
KIDCARE	Child-care concerns	nominal
KILOM	Vector distance: home-clinic	interval
LIFCYC	Presence of children under 5	nominal
MENINFOR	Number of men in informal sector	interval
MENSTDNT	Number of men over 14 studying	interval
MOMKID	Mother bringing child for care	nominal
NINA	Number of girls in household	interval
NINC	Number of boys in household	interval
PERCAP	Per capita household income	interval
PERPOOR	% poor in users' neighborhood	interval
PEMMEN	Men in state work programs	interval
PEMWOM	Women in state work programs	interval
PREFPRIV	Prefer private doctors	nominal
PRIVDOC	Ever attended by private doctor	nominal
PROXIM	Lives close-far from clinic	nominal
POSTA	Attended at first-aid station	nominal
QUALCARE	Evaluation of care (very good, good,fair, bad, very bad)	ordinal
SEX	Gender of patient interviewed	nominal

Table 12 continued

Label	Definition	Measurement
STATEMEN	Male workers in state programs	interval
STATEWOM	Female workers in state programs	interval
STAFCAMB	Thought staff changed a lot	nominal
SUGGEST	Suggestions for improving clinic	nominal
TRAVTIME	Travel time to clinic	interval
WAITIME	Waiting time at clinic	interval
WHYDELAY	Patient delay in seeking care	interval
WOMSTDNT	Adult female students	interval
WORKRATE	Adult workers/all adults	interval

household profiles; 2) the spatial behavior of consumers; 3) patients at the clinic; and 4) the outcome of treatment in terms of the frequency of utilization and the perception of care. The following section uses two multivariate models in predicting types of help-seeking behavior. One model is comprised of demographic (economic and household) variables and the other is based on organizational variables from the clinic and the patients' neighborhoods. These demographic and organizational models of care attempt to select the best predictors of the frequency of medical care utilization and consumer evaluation of that care. A final section discusses and summarizes the help-seeking behavior of the urban poor and draws on comparable experiences both nationally and internationally. The implications of consumers preferences for public or private providers is considered in light of the gradual privatizaton of medical services in Chile in

general, and the administrative transfer in recent years of S.N.S.S. facilities to municipal management.

The Health Care Setting

The S.N.S.S. operated 64 primary care facilities in Metropolitan Santiago in 1983. These facilities are the first point of entry into the public medical care system. Referrals (interconsultas) for secondary and tertiary care are made at this level. For this reason, evaluation of medical care and consumer utilization at this level is an important component of primary medical attention and the continuity of care at higher levels of specialization. Although each S.N.S.S. facility has a designated service area, indigents and blue-collar workers (obreros) who lack a regular source of care may attend any facility in the country without financial cost. The Villa O'Higgins S.N.S.S. facility was selected for this study because it provided approximately the metropolitan average of physician hours worked weekly. Three female and one male physician each worked there forty hours weekly. The clinic lies at the periphery of the urban area as do most low-income districts in Santiago. Clinic users work in occupations common among the urban poor in Chile: government work programs, the informal sector (ambulant vendors, waste recyclers, parking attendants) low-skilled laborers, and domestic servants. La Florida Municipality, where Villa

O'Higgins, is located is well served by a public transportation network for intra- and inter-municipal travel.

Consumer and Household Attributes

Socioeconomic and Help-Seeking Profiles

Of the patients interviewed in this survey, 73 percent were female and one-quarter were mothers who brought their children in for medical examinations. None of the patients sought contraceptives or family planning counseling as these functions are handled in another section of the facility during certain morning hours. The population was middle-aged (M=35). Acute care patients comprised 66.4 percent of the sample and the rest were chronic-care patients for such treatment as diabetes, high-blood presure and alcoholism. Leading illnesses within the last two years for the 40 percent who were chronic-care patients were pulmonary diseases (24 percent), degenerative diseases (15 percent), non-pulmonary infectious diseases (12 percent), and diabetes (9 percent).

The use of modern versus traditional medicines was addressed by the questionnaire. Prescription and non-prescription drugs are sold in pharmacies in Chile, and one-third of those interviewed rely on the pharmacy as a regular source of medication or advice. Clerks, managers, pharmacists, and even shoppers in Chilean pharmacies

frequently give health care advice. However, traditional medicines are more prevalent than modern pharmaceuticals. More than half (59 percent) used herbal remedies in the form of teas, unguents and purges while only two-thirds (36 percent) used the pharmacy regularly. Herbal remedies are widely sold by street vendors and shopkeepers.

Patients came from large and poor households that spend most of their income on food. These households were on average larger (5.0 versus 4.6) than the municipal mean (Municipality of La Florida, 1984). A household monthly income average of 8,200 pesos (about U.S. $100.00) revealed that most families fall below an often cited, although unofficial, poverty level of 12,000 pesos (Sistema de Salud, 16 November 1983). Three-quarters (76 percent) of household income was spent on food, a disproportionate amount compared to the 42 percent of the Consumer Price Index that measures food price changes in Chile (INE, 1983). This large outlay for food may account for the consumers' dependence on the clinic for most of their prescribed drugs which are free.

Household monthly income showed a moderate and positive correlation with the number of working men (.38) and working women outside of the home (.28) ($p<.001$). The significance level ($p<.001$) indicates that there is one chance out of 1000 that the null hypothesis set up for this correlation test, stating that there are no statistically significant associations between monthly household income and the number

of working men and women in the household, should be rejected when in fact it is true. But another way, there is just one chance in 1000 that the strength of the correlation between the two variables is a function of sampling error, producing spurious results. Per capita income was negatively related to the presence of children five years old or younger in households (-.31), the need to find child care when adults attend the clinic (-.29) and waiting time at the clinic (-.31) ($p<.001$). The relationship between waiting time and per capita income concurs with comments made to the author that auxiliary staff give preferential treatment to better-dressed patients and that some consumers are able to pay people to wait in line for them as early as 4:30 A.M. until the numbers for the queue are alloted at 7:30 A.M.

The expected positive relationship between the number of working adults in the household and income levels was found. Almost one-third (29 percent) of all households lacked adult male workers and were accordingly classified as female-headed households (FEMHEAD). FEMHEAD exhibited the expected relationship with the number of working men (-.53), working women (.40), and men in the informal (-.27) and formal (-.32) sectors of the economy ($p<.001$). Differences in employment were found between the sexes. Government work programs were the greatest source of employment for men whereas the informal sector provided the main source of

income for women. About twice the proportion of men (19.8 percent) as women (11.8 percent) were unemployed.

Compounding the economic pressures brought on by adult unemployment was a high dependency ratio of 2.2 unemployed household members (unemployed adults, children, retirees, students) for each wage earner. Twenty-two percent of the homes had pensioned retirees. Working outside of the home was also different for men and women. While nine out of ten households had at least one male worker, only 58 percent of the households had women who worked outside the home. Given this gender difference, it is not surprising that household income was more strongly correlated with the number of working women (.37) than with working men (.28) ($p<.001$). Although the correlation coefficient for the number of working men is greater than the coefficient for the number of working women, a z-test outlined by Agresti and Agresti (1979, 318-19) revealed that the correlation values are not significantly different from each other.

Spatial Behavior of Patients

Geographic barriers to medical care in the form of geometric (linear) distance and travel time were deterrents for patients at Villa O'Higgins. Half of the patients lived within .7 km. from the clinic (SD=.86) and about two-thirds (62.1 percent) reached the clinic in ten minutes or less (M=13.73, SD=12.29). All but two patients came from the

resident municipality even though the clinic is located close to municipal boundaries (Figure 11). Because their medical indigence is certified by La Florida social workers, it is likely that they can be more easily treated in the county where they reside. Patients overwhelmingly (85 percent) felt that they lived close to the clinic and nearly the same proportion (86 percent) walked there. Financial costs of travel were incurred by 9 percent who travelled by bus and possibly for those who travelled by automobile (4 percent).

Patients' perception of their proximity to care (PROXIM, 1=close, 0=far away) is corroborated by its correlation with the distance-to-clinic variable (-.42) and patients estimated travel time (-.39) ($p<.001$). Median travel time was nine minutes and the average was about 14 minutes. When patients were asked if they always came to the clinic when they were ill, 85 percent answered affirmatively, suggesting that they depend heavily on the medical care at Villa O'Higgins. Reasons for attending Villa O'Higgins were that they felt they had a right[2] (me corresponde) to use the clinic (44 percent), it was the

[2] A number of possible translations exist for me corresponde and me pertenece. Given the intonation in the voice and the strong affirmation in responding to the question about why they came to the clinic, it seems safe to take a figurative translation of the responses. Literally, their answers were "I belong here" or "I am assigned here." But when the phrase me corresponde or me pertenece is used in Chile and it refers to social programs, it usually implies that a service is legally condoned and they are a designated beneficiary.

closest clinic (33 percent), they lacked medical coverage (10 percent), and that the care at the clinic was good (10 percent).

One measure (PERPCOR) of the wellbeing of the patients' neighborhoods was taken from an on-going government survey.[3] The range of the percent poor in the neighborhoods of those sampled was from 6 percent to 25 percent with a total sample average of 18.7 percent (SD=3.6). PERPCOR was moderately correlated (-.36, $p<.001$) with the distance-to-clinic variable (KILOM), attesting to the relatively good location of the S.N.S.S. facility in a low-income district.

Patients at the Clinic

Patients interviewed at Villa O'Higgins had much experience with health care providers in both the public and private sectors. Nearly all (95 percent) had been treated at the first-aid station (posta) and 74 percent had been hospitalized at least once. A Chi-square test revealed no statistically significant differences between presence or

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[3] The C.A.S. (Comite de Accion Social) is a standard of living survey coordinated by the Ministry of the Interior and carried out by munical governments. The survey is a measure of the physical conditions of homes and does not include questions of income. All persons wishing housing subsidies and free health care must submit to a household survey. Responses are weighted and produce a summary score of standard of living which is then divided into five groups. Those households with scores in the first three groups are classified as "extremely poor" and are able to receive state benefits. The PERPOOR variable used in this study measures the percent poor according to the C.A.S. data.

absence of hospitalization and gender. Slightly less than half (46 percent) of the patients had seen a private doctor either because they had medical coverage or once had money to see one (48 percent), needed to see a specialist (31 percent), or required urgent care (17 percent) (preferences for private against public care are discussed later). Most patients (70 percent) interviewed had been using the Villa O'Higgins facility for the last five years and a small percentage (20 percent) had changed facilities just once in that same period, implying that the user population was fairly stable.

Three questions examined potential hindrances to care as a result of the patient's job obligation, household responsibilities and the administrative structure of the clinic. The first question showed that two-thirds came to the clinic as soon as they became ill or noted symptoms, and were attended. Among those that did not receive care at the outset of illness, the reasons were "came but was not attended" (19 percent), "took home remedies but illness worsened" (14 percent), and "work-related problems" (4 percent). That one of five patients returned because they were not attended on previous visits (either because they tired of waiting or could not be seen) would indicate a shortage of medical personnel. Only a small proportion took home remedies and this concurs with the small role that herbs and pharmaceuticals from the pharmacy play in self-

care. Although only 4 percent delayed in seeking care because of work-related problems, it is important to note that all Chileans who work in the formal sector are exempted from work for the purpose of a medical visit. A cross-classification showed that those workers who delayed in seeking care were informal sector workers.

Child and nursery care concerns became evident in the survey, but they did not form a major hindrance to care. Child-care concerns were not applicable to half of those surveyed because children were not in the home. When children lived in the home, significant others (friends, neighbors, spouse) watched children in 35 percent of the cases, 14 percent said that the children looked after themselves, and 11 percent brought the children to the clinic because the mother had no alternative but to bring them with her. Although three-quarters of the interviewees were female, child care was not a barrier to seeking medical assistance for women.

A third question assessed possible barriers to care by asking if any difficulties "were placed on you by the clinic in getting care." Two out of three patients (68 percent) claimed they experienced no clinic-related difficulties. The chief clinic-related problem was that the social workers or auxiliary personnel (who assign patients to queues) were discourteous. Patients and staff contend this conflict usually centers on whether or not the patient has an

alternative source of care or is indigent. One-quarter of all patients had to show either a S.N.S.S. medical care provision card (15 percent) or a residency certificate from the Villa O'Higgins service area (9 percent). Requesting certificate of residency is not a required procedure since all persons without employer-sponsored care may be attended at any S.N.S.S. facility. The clinic requested partial payment for drugs or tests from only 2 persons (1.5 percent). Thus the majority of patients felt that the clinic did not impede care.

A common feature in state-run primary care centers around the world is the inordinate waiting time between arrival and examination. Therefore, it was not surprising to find a 4.2 hour mean waiting time (SD=1.95). Unpredictably, however, there was no relationship between waiting time and expressed quality of care. Some adults reported that younger family members wait in line for them in order to get a number from the limited allotment of daily examinations, and this may account for the lack of correspondence between waiting time and quality of care.

Patients were asked open-ended questions concerning their single greatest dislike and like about the clinic. On the one hand, half (49 percent) of the people interviewed did not express a dislike about the clinic. A lengthy wait[4]

[4] U.S. standards regarding the time for primary care (except in emergency rooms) are clearly not comparable. What is evident throughout the Chilean medical system, as in other socialized medical systems, is the complacency among

(24 percent), poor treatment by the staff (19 percent) and lack of cleanliness in the waiting area and restrooms (5 percent) were the leading ones. On the other hand, four of five had something good to say about the clinic. Eighty-three percent of the patients cited a physician-related factor (the doctor touched them, listened attentively, etc.) as their greatest like.

Lastly, the questionnaire posed three questions that examined patient views on the continuity of care. Sixty percent said that physicians are rotated often. Despite the alleged turnover of doctors at the clinic, half (51 percent) of the patients said they were able to select the physician of their choice. All 140 patients said that they would like to be examined by the physician of their choice.

Outcomes of Care

Frequency of Utilization.

Having described the individual and household profiles of the consumers, their spatial behavior in seeking care, and their experiences at the clinic, the discussion now turns to the descriptive indicators of the outcomes of care. This section presents the patients' perception of the care given and whether or not tests or medications were prescribed to them. This section intentionally excludes a

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users. Long waits become a norm and a cost that the user must pay.

clinical appraisal of the correctness of medical treatment and patient compliance with physician advice (see Donabedian, 1980, Chapter 2). Instead, attention is given to the perceptual evaluative facet of care because most S.N.S.S. consumers lack the purchasing power to seek help elsewhere. These consumers effect very little change in their medical system. They have no input into improving certain aspects of the health care setting (facility cleanliness, comfortable waiting area) nor can they demand more personnel or types of specialists. S.N.S.S. users remain the least influential agents in a hierarchical medical system where decision making is totally outside their control.

One outcome of medical care was the frequency of visits to Villa O'Higgins in the last year (FREQVIS). Patients interviewed averaged 6.4 visits per year with a range of one to 30 visits (SD=6.4). (Comparative figures are difficult to cite because this study surveyed only users. However, a recent health survey found that Santiago residents who claimed the S.N.S.S. as their regular source of care averaged 0.98 visits per year (Medina, n.d., 28)). Unexpectedly, a Chi-Square test revealed no significant differences between the frequency of visits among chronic and acute care patients. This lack of expected correspondence may be attributable to the large number of mothers who frequently bring children to the clinic, thereby increasing the number of visits by acute care patients.

One-quarter (24.3 percent) of all patients visited the clinic for the first time and 15 percent had attended at least 12 times in as many months.

Most patients passed through the clinic receiving a prescription drug or laboratory test. Eighty-five percent of the patients were given drugs from the clinic pharmacy. About one third of the patients had a laboratory test or examination prescribed at the clinic or the public hospital 5 kilometers away.

Satisfaction with Care.

Levels of patient satisfaction were measured by two variables. The variable EASECARE was coded as a dichotomous variable for the following question: "Was it easy or difficult to get care at the clinic?" Responses were coded 1=easy and 0=difficult. Nearly two-thirds of all patients (64 percent) said that it was easy to get care. The EASECARE variable was correlated with other dichotomous variables: CLINLIKE (specification of a single like, .31, p=.0001); travel time (TRAVTIME, -.25, p=.0034); and whether or not respondents mainly offered any suggestions when asked what improvements could be made to increase the efficiency of the clinic (SUGGEST, -.39, p<.001). The latter variable indicates that suggestions were offered when it was difficult to get care.

Given the importance that spatial variables have played in international health care studies (Kohn and White, 1976),

a further test was incorporated to assess the strength of the correlation between travel time (TRAVTIME) and the ease by which care is obtained (EASECARE). Because the product-moment correlation is best suited for continuous variables, the point-biserial correlation method was used to test TRAVTIME and EASECARE. The point-biserial correlation technique is an appropriate test when one variable is continuous (TRAVTIME) and the other is dichotomous (EASECARE) (Isaac and Michael, 1981, 168-72). Its computation considers the mean travel time for those that found care to be easily obtainable (M=11.5 minutes) and for those that did not (M=15.9 minutes). A point-biserial correlation coefficient of -.192 (p=.05) indicated the strength of the relationship between the two variables was not as strong as originally thought. Since both the product-moment and point-biserial correlation methods are measures of statistical association and not causality, further discussion is delayed until the section ahead regarding models of utilization and satisfaction with care.

A more refined outcome measure of care (QUALCARE) was coded from responses to the following question: "Would you say the medical care was very good, good, fair, bad, or very bad?" Care was generally well perceived by patients. Responses were as follows: very good (12.1 percent); good (72.1 percent); fair (14.3 percent); bad (1.5 percent); and very bad (0 percent). QUALCARE was moderately correlated

with other dichotomcus variables (Table 13). Despite the relatively low correlations, the relationship is sigrificant given that (i) the variables in Table 13 are qualitative variables and thus are mathematically more difficult tc produce good linear fits; and (ii) there is less than a 2 percent chance that the relaticnships are the result cf unrepresentative sampling. Variables CLINIKE (e.g, liked the physicians, the receipt cf a drug) and DISLIKE (e.g., disliked crowded conditions, long wait, staff treatment) correlate with QUAICARE in the expected directicns. The significance of the HOSPITAL variable is more difficult to decipher given that about three-fourths of the patients were hospitalized at least once. Only the GCODCARE variable, which measured whether or not the doctor examined the patient well (asked questions, tcuched and talked with the patient, showed interest in the patient), signals a specific factor of the physician-patient relaticnship.

Equally pertinent to the discusicn cf quality cf care are those variables that were expected to correlate with QUALCARE but did nct. Waiting time and the presence cr absence of clinic-imposed barriers were expected tc correlate negatively with QUALCARE while the receipt cf a drug or test would have shown a strcng and pcsitive relationship. However, the expected relationships were nct found. A causal analysis of the determinants of outcomes cf care follows.

TABLE 13

Selected Correlates of Quality of Care (QUALCARE)

Variable	Correlation Coefficient	Significance Level
KIDCARE	-.22	.0103
CLINLIKE	.34	.0001
DISLIKES	-.21	.0117
HOSPITAL	-.26	.0024
GOODCARE	.26	.0018

Responses were coded 1=yes and 0=no. Variable labels mean the following: KIDCARE, Did child-care concerns affect the decision to seek care?; CLINLIKE, Did patients like something about the clinic?; DISLIKES, Did patients dislike something about the clinic?; GOODCARE, Did patients evaluate care based on the doctors' bed-side manner? (i.e., asking questions, examining the patient).

Models of Patient Utilization and Satisfaction

The discussion moves beyond a review of the best descriptive indicators of the outcomes and care in this section by using least-squares methods to identify the factors underlying the three outcome measures described above: FREQVIS (the number of visits to the clinic in the past twelve months), EASECARE (was it easy (1) or difficult (0) to obtain care), and QUALCARE (was care very good, good, fair, poor, or very poor?).

Two sets of variables were hypothesized to explain the three outcomes of care. The first, demographic variables, include measures of family size, life cycle, age, and

gender. Because they are fixed attributes, they are not easily changed by administrative intervention, but are useful in identifying group needs. Organizational models include measures of procedures performed on patients and factors that influence their waiting and travel time. In this study, additional variables were added to describe the ecological conditions of users' neighborhoods, their spatial behavior in seeking care, and process variables that describe their treatment. Unlike the demographic model, the organizational model is subject to policy or administrative intervention (Shortell, 1980, 67).

Utilization of Care

Three independent variables thought to be predictors of the number of visits to the clinic in the last year were graphed against the FREQVIS variable. The logarithm of FREQVIS was employed because of a few high values. Interaction was tested between travel time and linear distance from home to clinic (TRAVTIME*KILOM). A general linear model (GLM) was then used in selecting the best predictors of the frequency of visits to Villa O'Higgins in the last year. Six variables explained 26.8 percent of the model variance (Table 15). The significance of the F-value and the R-square led to the rejection of the null hypothesis. In turn, the alternate hypothesis, stating that at least one of the model coefficients is nonzero, was accepted (Benson and McClave, 1982, 474).

TABLE 14

Variables of Demographic and Organizational Models

Variable Label	Definition	Measurement
Demographic Model		
ABLEMEN	Males over 14 not studying	interval
ABLEMWOM	Women over 14 not studying	interval
AGE	Age of patient treated	interval
FEMHEAD	Female-headed household	nominal
FEMINFOR	Women in informal sector	interval
FOODPER	Food expenditures per person	interval
HHSIZE	Household size	interval
KIDCARE	Child-care concerns	nominal
LIFCYC	Presence of children under 5	nominal
MENINFOR	Number of men in informal sector	interval
MENSTDNT	Number of men over 14 studying	interval
MOMKID	Mother bringing child for care	nominal
PERCAP	Per capita household income	interval
PRIVDOC	Ever attended by private doctor	nominal
SEX	gender of patient interviewed	nominal
STATEMEN	Male workers in state programs	interval
STATEWOM	Female workers in state programs	interval
TIMEILL	Chronic- or acute-care patient	nominal
WOMSTDNT	Adult female students	interval
WORKRATE	Adult workers/all adults	interval
Organizational Model		
CLINCAMB	Clinic changes in last 5 years	interval
DRUGTEST	Receipt of drug/test cited as reason for quality of care	nominal
DOCSELEC	Able to see preferred doctor	nominal
GOTDRUG	Receipt of drug/test at clinic	nominal
KILOM	Vector distance: home-clinic	interval
PERPOOR	percent poor in users' neighborhood	interval
PROXIM	Lives close-far from clinic	nominal
STAFCAMB	Thought staff changed a lot	nominal
TRAVTIME	Travel time to clinic	interval
WAITIME	Waiting time at clinic	interval
WHYDELAY	Patient delay in seeking care	nominal

TABLE 15

Predictors of Utilization (FREQVIS)

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	6	25.925	4.321	5.251	0.0001
ERROR	86	70.801	0.823		
C TOTAL	92	96.726			

ROOT MEAN SQ. ERROR 0.907 R-SQUARE 0.268
DEPENDENT MEAN 6.429

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H: PARM.=0	PROB.>
INTERCEPT	1	1.490	0.277	5.37	0.0001
MOMKID	1	0.819	0.221	3.71	0.0004
LIFCYC	1	0.288	0.213	1.35	0.1790
TRAVTIME	1	0.012	0.013	0.90	0.3697
WAITIME	1	-0.100	0.051	-1.95	0.0546
TIMEILL	1	-0.001	0.006	-0.17	0.8619
TRAVTIME* KILOM	1	-0.173	0.007	-2.32	0.0229

See text for variable definitions.

A series of regression trials produced six independent variables in its best model: half were organizational variables and half were demographic. Taken as a whole, the independent variables predict that the most frequent users are mothers with children who live relatively close to the clinic. The model is appealing in that nearby residents with children under the age of five would be expected to attend more often. As experienced users, they would be more

TABLE 16

Perceptiocn of Quality Care (QUALCARE)

SOURCE	DF	SUM CF SQUARES	MEAN SQUARE	F VALUE	PRCB>F
MODEL	4	13.227	3.3070	14.207	0.0001
ERROR	135	31.424	0.2328		
C TOTAL	139	44.650			

ROOT MEAN SQ. ERBOB 0.482 R-SQUARE 0.2962
DEPENDENT VAR. MEAN 2.950

VARIABLE	DF	PABAMETEB ESTIMATE	STANDARD ERBOR	T FOB HC: PARAM.=0	PBOB>|T|
INTERCEPT	1	2.151	0.144	14.894	0.0001
DISLIKES	1	0.394	0.138	2.864	0.0049
GOODCARE	1	0.622	0.117	5.308	0.0001
DRUGTEST	1	0.712	0.146	4.892	0.0001
LIFCYC	1	-0.177	0.082	-2.168	0.0319

See text for variable definiticns.

familiar with clinic cperaticns thereby waiting less time. Because a limited number of appointments are provided cne day in advance, it is likely that thcse whc live clcser to the clinic would have greater access to making an appointment. Patients or their designates must appear at the clinic to secure an appointment with the physician tecause patients cannot schedule appointments tc S.N.S.S. facilities by telephone. Chronic versus acute patients (TIMEILL) were not significant predictors of utilizaticn as suspected.

Satisfaction with Care

Two dependent variables addressed patients' satisfaction with care. The first of these variables, QUALCARE, was best predicted by four independent variables (Table 16) that explain about 30 percent of the total model variance. Variables GOODCARE and DRUGTEST show that good medical care (i.e, physician bedside manner and drug or test receipt respectively) is the best predictor of perceived quality care. Patients from younger households presumably use more medical care for pediatric purposes than other patients and this variable (LIFCYC) therefore enters the model. Except for the LIFCYC variable, all of the significant independent variables are organizational variables.

EASECARE was used as a dependent variable in this review of outcome measures of care for several reasons. Although the measure is a dichotomous measure of whether care was easy or difficult to obtain, it is pertinent to the S.N.S.S. consumer. The binary variable shows no graduated response scale but can, at a very general level, point to trends about cultural and organizational aspects of medical care accessibility. It will be recalled that nearly three-quarters of the respondents said that the quality of care was "good." That many described care as "good" might indicate politeness by the interviewee, fairly consistent treatment of all patients at the clinic, or a combination of

these factors. Thus, the EASECARE measure complements the regression results of the QUALCARE variable.

A logistic procedure was used because it fits a regression-like procedure to models with binary (0 or 1) dependent variables (SAS, 1982). Unlike standard multiple regression procedures which use ordinal or interval measures as dependent variables, logistic procedures lack standardized partial regression coefficients and R-Square measures.

One way to interpret the results of logistic regression is the use of predicted proportional effects (Burg, Crandall, and Muthard, 1985; Henretta and O'Rand, 1980; Nerlove and Press, 1973). Predicted proportional effects are the predicted changes in the probability of gaining easy access to care which results from a unit change in the independent variables when the respondent would otherwise be predicted to be at the mean of the dependent variable (i.e., when patients would have a fifty-fifty chance of finding easy access to care) (Petersen, 1985). Predicted proportional change is derived by multiplying the variance of the dependent variable by the full model coefficient. Chi-square measures in logit models represent twice the difference in in the log likelihood of the present model from likelihood that would would be generated based only on the intercept. As such it can be interpreted like the ratio chi-square found more commonly among simple 2x2 contingency tables when a binary variable is present.

Like the standard multiple regression models for FREQVIS and QUALCARE, organization variables based on residential and patient-at-clinic attributes are the best predictors of care. KILOM, PERPOOR and TRAVTIME contribute 12.4 percent, 2.9 percent and 1.6 percent respectively to the total predicated proportional change (Table 17). The logistic regression results imply that individuals travelling from more distant neighborhoods report more difficulty in receiving care. This relationship is in accordance with the relative location of the clinic; the proportion of poor neighborhoods decreases as distance from the clinic increases.

TABLE 17

Predictors of Medical Care Accessibility (EASECARE)

VARIABLE	LOGIT COEF.	CHI SQUARE	PROBAB.	PREDICTED PROPORTIONAL CHANGE
KILOM	.5304	2.46	.1171	.1237
PERPOOR	.1268	3.57	.0590	.0297
TRAVTIME	-.0698	9.91	.0016	.0163

See text for variable definitions.

Discussion and Summary

The findings at this S.N.S.S. facility in southeastern Santiago lend themselves to review within both a national and international context of health services research. At the national level, this survey confirms a finding of a health survey sanctioned by the Ministry of Health and the S.N.S.S. that a "high degree" of satisfaction exists among users of public medical care (Encuesta de Salud, 29 March, 1984).The Villa O'Higgins study, however, shows that patients separated visits with doctors and S.N.S.S. administrative procedures. It is also apparent that users view care in very pragmatic terms or they lack experience in other medical systems that have shorter waiting times. The inherent problems of long waiting lines averaging 4.2 hours, conflict with ancillary personnel, and an overall lack of clinic amenities, are offset by good physician treatment.

No significant differences in the levels of utilization or the degrees of satisfaction were found between users from femaleversus male-headed households, despite some evidence to the contrary by Raczynski and Serrano (1984) in their study of a low-income neighborhood in northern Santiago. However, about one-third of the female users in this study depended on significant others for child care when they attend the clinic. This integral social network of help and reciprocity is an important element among the urban poor throughout Latin America (Lomnitz, 1978; Schmink, 1982).

Possibly the economic homogeneity of the sample population accounts for the lack of significant differences in the perception of care and the frequency of utilization by income. There is no comparative figure to assess the significance that one-third of the sample found care to be generally inaccessible at Villa O'Higgins. That 19 percent of the users could not get care previously indicates a shortage of physicians. The number is greater if those that do not attend because of the perception of a long wait are considered.

These findings can also be compared to a health care survey in Chile carried out within one month of the Villa O'Higgins study. Medina (n.d.) coordinated a study of 604 families (2,820 persons) carried out in Santiago by Gallup Chile, Inc. The research focused on the utilization patterns, morbidity profiles and socioeconomic characteristics of users among eight public and private health care programs in Santiago. Medina computed an "optimal" measurement of care shown in Table 18. Weighted scores were given to responses: very good (7), good (6) fair (3), and deficient (1). The optimal percentage (100 percent) is compared to the actual responses multiplied by their respective weights. Responses from the QUALCARE variable at Villa O'Higgins are compared to the Medina study. "Bad" and "Very Bad" responses from the Villa O'Higgins were classified as "Deficient" for comparative purposes.

Villa O'Higgins patients had a better appraisal of their medical care than the S.N.S.S. and "other public" groups, but they were less satisfied than their counterparts in the private sector. This positive view of medical care given by the S.N.S.S. contrasts markedly with patients' outlook on life. S.N.S.S. users are much less satisfied with their lives than users from other medical programs (Table 19). The Villa O'Higgins survey did not ask a similar question but it is likely that users would respond like other S.N.S.S. affiliates given their similar economic backgrounds. Physicians who listen, examine and touch the patient provide support in the difficult and stressful life-style of the urban poor. Future research should examine this relationship between the perception of medical care and its role in the general state of patients' wellbeing.

Consumers' preferences for private versus public medical care in this study have policy implications. They clearly prefer public providers over private ones even if they had the expendable income to seek care from the private sector. Fifty-five percent of the respondents had never seen a private physician and nearly the same percentage (53 percent) prefer to see a private doctor as opposed to a public one. The leading response among those who preferred private medical care was that it was quicker (58 percent) followed by those who thought it was better than public care (17 percent). A related variable (IFBUCS) was then measured

TABLE 18

Patient Responses on Quality of Medical Care, Chile, 1983

RATING	S.N.S.S.	VILLA O'HIGGINS	ALL PUBLIC	ALL PRIVATE
	(responses in percentages)			
VERY GOOD	11	12	15	48
GOOD	65	72	66	52
FAIR	17	14	14	0
DEFICIENT	8	2	5	0
PERCENT OPTIMUM	72	82	78	92

Source: All data except except those from the Villa O'Higgins column are from Medina, n.d., Table 29.

by responses to, "Would you prefer to use a private physician if you had the money to see one?" Only 52 percent of the respondents answered affirmatively. A strong and negative relationship (-.90) between the preference for a private doctor (PREFPRIV) and the desire to use private physicians if money was no barrier (IFBUCS) indicates that S.N.S.S. consumers' demand is very inelastic. Patient satisfaction with S.N.S.S.-delivered care may be due, in good measure, to the fact that medical care is free and few alternatives exist. As the Chilean government gradually withdraws public funds from the total medical care system, the poor will be most affected. Moreover, the possible implementation of across-the-board small charges for

TABLE 19

Outlook on Life Among Health Care Users, Chile, 1983

Health Care Program	Satisfaction With Life (%) Satisfied	Unsatisfied	Quality of Life Good & Very Good	Fair	Bad & Very Bad
S.N.S.S.	30	70	11	48	41
Military	71	29	60	33	7
Other Publ.	37	63	19	71	10
FONASA	51	49	42	43	14
ISAPRES	64	36	66	28	3
Priv. (solo)	64	36	49	44	6
Priv. (clinic)	62	39	48	30	22
Other*	61	39	32	47	16
TOTAL	46	54	30	45	24

*"Other" refers to physicians who are friends or family members.
Source: Medina, n.d., p. 27, Table 23.

S.N.S.S. services and medical products (Spoerer, 1973) will likely reduce utilization. Because only about one-fourth of household income remains after food expenditures, medical care costs would then have to compete with other needs such as housing and clothing. If superfluous utilization is currently present, then perhaps a reduction of physician use would not effect the population's health status.

A related area of consumer satisfaction in public primary medical care was seen by the high percentage (85 percent) of patients who received a prescription drug. This

variable (GOTDRUG), however, did not correlate significantly with any outcome measures; perhaps because so many patients received drugs it has become a "standard" at this clinic. Moreover, patients preferred expensive imported medications as opposed to national brands.[5] Urban consumer preference for imported health care items was also noted in a study by Zalazar (1983a, 1983b) of 196 low-income residents in southern Santiago. Like rural health care users in Chile, herbal remedies are used in conjunction with modern medication but not as a substitute (Scarpaci, 1983).

Spatial variables proved to be antecedents to the outcome measures assessed. Distance to clinic and travel time to clinic have been important in other health care settings as well. Rice and White's review of the World Health Organization survey of cross-national patterns of medical care utilization concluded that

> the use of physicians' services decreases . . . with increasing distance to physicians. Regardless of income bracket, the use of physician services is distinctly greater among persons living near a physician than among other distance groups . . . the effect of distance seems to be linked chiefly to persons of small income. (1971, 254)

Kohn and White (1976, 50) comment in their review of the same WHO study that 77 percent of all patients lived within 15 minutes. A 1969 national survey in the U.S. revealed

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[5] Patients were familiar with a number of brand names and frequently cited Brazilian, German, Swiss, and U.S. pharmaceutical brands. They claimed that these foreign brands were better than Chilean ones.

that 49.7 percent of the population could get to their regular source of primary medical care in less than 15 minutes (Aday and Andersen, 1975). Villa O'Higgins have comparable, if not slightly better, geographic access than users in other health care settings.

Survey findings here lend themselves to further direct comparison with international studies of physician use. In general, there is a strong relationship between the receipt of an "objective" medical treatment such as an x-ray, laboratory test, and prescription drug, and the perception of high quality medical care (Donabedian, 1980, 39). This was also apparent in this study by the presence of variables GOODCARE and DRUGTEST in the final regression model with QUALCARE as the dependent variable.

Cultural differences about the composition of good medical care are highlighted by this study and a seminal British study conducted by Ann Cartwright (1967). She focused on general practitioners in England and Wales. Using open-ended responses, British patients asked to identify those attributes of general practitioners (GPs) that they appreciate. None of the British respondents said that being touched by the physician was an important attribute.[6] In contrast, touching was frequently cited by Villa O'Higgins patients as a reason why care was good (coded by the

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[6] It is possible that the specific item of touching was listed under another rubric. However, this is not apparent in the headings used by Cartwright (1967, 5-7).

GOODCARE variable). Thus, Freidson's (1961) contention that all patients want both "competence" as well as "personal interest" from their providers is evident in the present study, but "personal interest" appears to be culturally defined.

The variance explained by the models used in this study show remarkable consistency with other studies (see Mechanic, 1979). In the the U.S. it consistently appears that more than 85 percent of all users are satisfied with medical care; mainly because they have medical providers whom they feel are good (Roemer, 1980, 377). Feldman (1966) concluded that 89 percent of U.S. patients surveyed were "entirely satisfied" with care and only 11 percent were "not entirely satisfied." A U.S. 1975-76 national study found that 88 percent were satisfied with their last visit to the doctor, and 87 percent were satisfied with the quality of care (Robert Wood Johnston Foundation, 1978). In this present study, satisfaction per se was not measured but it can be approximated by collapsing the responses to QUALCARE. "Very good" and "good" responses account for 84 percent of all evaluations, again coinciding with the trend found in the general literature.

Also in accordance with the literature is the percentage of model variation explained in the analysis of quality of care and utilization. Shortell (1980, 78) has shown that models of utilization at modern medical settings

tend to explain between 15 percent to 25 percent of the total variance. Mechanic (1979, 388) says that this explained variance ranges from 16 percent to 25 percent. Wolinsky (1978), for example, predicted physician utilization with regression models using 29 predictors. These independent variables explained between 9 percent to 12 percent of the variance. That models of utilization and satisfaction tend to explain relatively little variance may be the result of measurement or specification error, or there may be little variation in the dependent variable due to a "halo effect" in responses. This study was able to explain 26.8 percent and 29.6 percent of the variance in the FREQVIS and QUALCARE models respectively.

Institutional access to primary medical care for women and those from female-headed households appears to be better in Chile than in other Latin American countries according to this study. Because of the national coverage provided by the S.N.S.S., program affiliation in a particular pension or social security program is not required to receive primary medical care in Chile. In Colombia it was reported that women had less access to social security benefits which, in turn, limited their use of primary care. This sex differential reflects the fact that more men work in the formal sector where medical care coverage is available (Tellez, 1977). Differential access to social security benefits also exist in Lima where almost 88 percent of the

manual workers eligible for medical care are men (Urrutia, 1975). A study in Belo Horizonte, Brasil found that female-headed households were twice as likely to use charity or religious sponsored health services as government sponsored programs (Schmink, 1982). This is common throughout America because women have less access to medical care as they work in greater percentages in the informal sector and are denied medical care benefits (Schmink and Merrick, 1982). This demonstrates that organizational settings greatly affect patterns of medical care.

It seems clear that some of the inherent difficulty in comparative health care research is the assessment of qualitative aspects of medical care. Clearly, non-material variables are difficult to describe--let alone to quantify (Kohn and White, 1976). For this reason subsequent research should consider Antonovsky's model (1979) of utilization and satisfaction. The model draws on the sociocultural environment such as the class differences between providers and patients as well as physicians' tolerance of ambiguity when patients describe symptoms. Physicians at Villa O'Higgins were young, from considerably higher income backgrounds than their patients, and most expected to enter more lucrative private practice in the future. Despite the different backgrounds between physicians and patients, provider concern for their patients played a considerable role in patients' view of the quality of care.

CHAPTER V
SPATIAL ORGANIZATION OF PRIMARY MEDICAL CARE IN SANTIAGO

Introduction

The purpose of this chapter is two-fold. First, it analyzes the spatial organization of public and private primary medical care facilities in Santiago, Chile. Second, it compares that pattern with those from Canada and the United States. As pointed out in Chapter Two, structural changes in health care financing in Chile in recent years have been designed to expand the private medical market. The development of a large private medical market makes the Chilean experience comparable with a nation like Canada, where the private medical sector is quite small and most of the health care is subsidized by the federal and provincial governments, and to the United States where private medical care predominates.

Harloe (1981) argued that comparative urban research between capitalist and socialist societies, and the wide range of diversity within each type of society, provides insights into urbanization. He states, moreover, that comparative urban and economic studies

> ensure that national and international characteristics of urban development are not confused, but also (to) enable a conscious recognition to be made by researchers of the

> limitations that the very conditions which surround their activity impose on the context of their work, conditions which are likely to be highlighted and contrasted by circumstances elsewhere (Harloe, 1981, 185).

A study of the location of physicians can contribute to the understanding of the physical structure of a city as well as the supply of providers and demand by consumers. The location of private practices often represents a compromise between patients' wishes to minimize travel distance and physicians' needs for nearby hospital and support facilities. The abundant literature on the location of primary care facilities in the U.S. and Canada provides a a good framework against which the Chilean case can be compared. This chapter will show that the spatial organization of private physicians in Chile is the result of health policies and economic forces similar to those that have shaped the spatial pattern of primary care in North America.

The chapter reviews the types of urban studies research carried out in Latin America so that study findings can be understood in their relative contexts. The growing literature devoted to Latin American urban research as well as the paradigmatic foci of human geography are reviewed so that the findings of this chapter can be placed in proper context. A brief description of the social ecology of Greater Santiago follows. An overview of the spatial organization of primary medical care in Canada and the

United States precedes the Santiago case study. The spatial pattern of physicians in Canada is described while the location of public hospitals and private medical centers is referred to in the case of the United States. Subsequently, the health policies that have come to influence these patterns in both countries are described. The second half of the chapter describes and analyzes the patterns of public and private primary medical care centers and physicians in Santiago in light of the trends identified in the first section.

As noted previously, an underlying assumption of this research is that health policy in Chile is a sub-system of a larger political and economic system. Accordingly, changes within the health sector can be detected in the urban geography of Santiago. The chapter also illustrates the differences between the two major research areas of medical geography: "epidemiological geography" or "disease ecology" on the one hand, and the "spatial organization" or "help-seeking behavior" of patients, on the other. The former body of research includes the traditional epidemiological studies that have been carried out since the time of Hippocrates and were reintroduced into medical research in the eighteenth and nineteenth centuries (Mayer, 1982; Barret, 1980). More recently, this perspective has been well represented by the classic works of the French physician-geographer Jacques May (May, 1950; 1958), and the

contributions by Meade (1980), Haggett (1976), Schiel and Wepfer (1976), and Hunter (1974). The focus of this kind of medical geographic research is the man-land-vector relationship in the spread and prophylaxis of disease. Another aspect of medical geographic research has recently focused on the spatial perspectives of health care planning and service delivery, the location of health facilities, and the help-seeking behavior of patients (Dever, 1980; Eyle, 1979, 165-267; Shannon and Dever, 1974). This chapter extends this latter branch of medical geography by assessing the distribution of public and private primary medical care facilities.

Location of PMC in Santiago: Three Lines of Thought

Johnston (1977) outlined three major lines of thought within human geography that represent paradigmatic and methodological approaches to the study of spatial behavior. Although these approaches are not mutually exclusive, they cover many of the philosophical and methodological perspectives of contemporary human geographic research. Johnston's outline is used here in assessing the descriptive patterns of public and private physician locations in Greater Santiago presented above.

Neo-Classical/Functional Approach

The neo-classical/functional approach is based on models that relate the location of economic activities and accessibility as a function of price. The study of PMC, for example, suggests a trade-off between the costs of travel (temporal, financial and cultural) and the degree of specialty in the search for care. PMC providers would be expected to be less expensive, more abundant, and more dispersed than specialists. This locational pattern results because most PMC services (internal medicine, pediatrics, and general practice) are mid-order economic activities, and specialty care (plastic and reparatory surgery, intensive care medicine, specialized heart surgery) are higher-order economic activities. Holding specialty type constant, private physicians would tend to set up practices in affluent neighborhoods where their clientele reside. This axiom is a basic premise of economic geography. In Santiago, for example, private physicians are concentrated in the highest income neighborhoods in metropolitan Santiago: Providencia and Las Condes. The location of few private physicians in low-income districts indicates the opposite; that most consumers lack the purchasing power or the need (given the availability of free S.N.S.S. facilities nearby) for frequent use of fee-for-service doctors. This economic approach does not relate this economic pattern back to the system of production or class relations. Rather, the

distribution of physicians and patients is an expected response to market forces and does not reflect attitudinal values such as the prestige that is tied to being located in an affluent neighborhood.

Humanistic Approach

Humanistic geographers challenge the neo-classical study of human spatial behavior because the latter, based on normative assumptions, often overlook critical individual differences in locational decision-making. Economic forces, it is argued, operate whether or not people recognize them as such. Humanistic geographers contend that individuals experience the world in unique ways that defy verifiable normative laws like those found in the positivist branches of human geography (Tuan, 1976; Buttimer, 1976). The association of this branch of human geography with phenomenology implies that individual human experiences, not market forces exclusively, influence locational decisions. Except for the study by Arze (1984), the humanistic approach has not been used in understanding the spatial organization of primary care centers in Santiago.

Structuralist Approach

A recent addition to perspectives of human geography is the institutional Marxist, or structuralist approach as outlined by Harvey (1973) and Peet (1975). Although there

are a number of interpretations of how Marxian inquiry should be conducted in the social sciences, there are common tenets. Verification and use of the scientific method is difficult, it is argued, because logical positivists fail to separate social problems (i.e., the unequal distribution of health or educational services) from their underlying causes. Patterns of inequity result from long-term and complex injustices that are founded in class and labor relations. Structuralist geographers argue that the documentation of a social injustice is merely a symptom of a larger process of alienation that the poor experience in a particular society. Positivist methods of analysis in human geography may be useless or irrelevant if one believes that

> mapping even more evidence of man's patent inhumanity to man is counter-revolutionary in the sense that it allows the bleeding-heart liberal to pretend he is contributing to a solution when in fact he is not (Harvey, 1972, 27, cited in Smith, 1974, 137).

In general, structuralists contend that behavioralists and economic determinists ignore the realities of decision-making in the marketplace. Humanistic perspectives make light of socioeconomic restrictions placed on consumers and providers in the marketplace. Marxist geographic perspectives criticize positivist approaches when they fail to explain individual, household and aggregate behavior without considering such institutional parameters as class, race, and ethnicity. A basic premise of Marxist geographic research is that locational behavior is principally

determined by power, predominantly economic power. As such, geographic research should consider the relevant political economy of a particular study. Studies of this type have been carried out in the housing market in the United States (see Harvey, 1975) and Canada (Harris, 1984).

In the Santiago PMC study, a number of possible interpretations arise. The national government in Chile may intervene in the medical care market because the private medical market is inefficient. De Vises' (1973) contention that physicians behave in response to their conservative ideology and upper-income backgrounds is part of this line of reasoning. Physicians are not willing to lower their fees for low-income citizens and, consequently, the S.N.S.S. intervened to fill this gap. Moreover, the S.N.S.S. can be viewed as an institution that must maintain a minimum level of health care among cheap labor pools so that the capitalist system of reproduction can continue. The cost for S.N.S.S. users is paid by long waiting in difficult conditions (i.e., early morning queues outside clinics). This cost can be seen as one of many that causes alienation among the proletariat (Kolakowski, 1978).

Castells (1974) has argued that many Western European countries provide a variety of social services not out of benevolence, but out of fear that social unrest will ensue without these services. This social unrest would, in turn, provide a starting point for revolutionary, or at least

strong anti-capitalist movements. The Chilean junta can also be viewed in this perspective. As the junta gradually reduces social programs, it is careful to provide health care, education and housing for the poor in order to avoid insurgent movements. Castells' notion of revolutionary movements seems more relevant to the Latin American context than his native France or Western Europe.

This chapter draws heavily on the positivist approach used by the neo-classical school in describing the spatial patterns of PMC providers in Greater Santiago. Predictably, therefore, one finding of this chapter is that private medical care centers are strongly and positively correlated with municipal income levels. More importantly, however, is the explanation of this pattern. It is here that the structuralist school provides the most insight. State-financed PMC is a response to medical market inefficiency as well as the need to ensure a healthy labor force that provides a minimum level of support for the Chilean regime.

The Evolution of Urban Studies in Latin America

A major shift in the paradigms of Latin American urban research has occurred during the last two decades. Early works took on a development focus that was concerned with the growth pole paradigm (Friedmann, 1973). Much of this research assumed that economic development was a unilinear process that, in Rostowian terms, manifested a series growth

stages. Since these stages were well documented in Europe and North America it was expected that Third World cities and nations would follow these stages if proper preconditions were established. The growth pole paradigm was an important cornerstone of this research. Such a developmental perspective, however, imposes rigid and mechanistic models of urban and regional growth and is therefore not realistic.

The rejection of mechanistic models such as the growth pole paradigm studies that trace the internal changes of urban and national economies (Portes and Canak, 1981). Instead of anticipating patterns of urban growth and economic development based on the historical experiences of industrial nations, a new body of research now focuses on the forces of urbanization and underdevelopment within a historical and international context. These studies give particular attention to the adaptation process of the urban poor who have not been absorbed by the formal industrial sector of the Latin American city (Anthony, 1979; Roberts, 1978; Lomnitz, 1978; Walton, 1977; Perlman, 1976; Collier, 1976; McGee, 1971; Vekemans et al., 1970; Hardoy, 1969; and Quijano, 1967). According to earlier studies, labor and capital should flow to labor- and capital-poor regions, and thereby stimulate development. Despite massive intra-regional migration and mounting debt, Latin America has not developed to the extent that many anticipated (Munoz, 1982).

Contemporary paradigms of Latin American urban research, however, traditionally reject the notion that the failure of Latin American cities to replicate the economic development of industrial nations resulted in maladies. Instead, contemporary paradigms highlight both the uniqueness of the urban poor in certain spatial and historical contexts as well as the interrelatedness of national and regional economies in the world capitalist system. Since Latin American cities are in the process of adaptation to urban growth and a changing world economy, they do not necessarily conform to earlier mechanistic models of urban growth and change.

Urban geographers have analyzed to what extent the morphology of Latin American cities differ from their North American counterparts. The morphological model of Griffin and Ford (1980), for example, evaluates the small highway network found in most Latin American cities that has been a limiting factor in the massive suburbanization process such as that found in North American cities. This model also notes that the heavy industrial zone that surrounds the Latin American Central Business District (CBD) takes advantage of the cheap labor of inner city residents. Ford and Griffin depict the Latin American city as ruled by a single transport artery which runs from the CBD outward. Gary Elbow (1983) applied this model to secondary cities in Guatemala and found that the Griffin and Ford model fit

well. Other models of the Latin American city have been presented which emphasize the colonial structure in city design and land use patterns (Bahr and Mertins, 1982; Bahr and Riesgo, 1981; Ingram and Carroll, 1981).

Latin American urban research must also address the rapid post-World War II population growth, often in excess of four percent per year. Specifically, this research has considered the rural-urban migration streams and the various stages that this process entails (Brown and Lawson, 1985; Thomas and Hunter, 1980; Turner, 1968; Mangin, 1967). These studies conclude that rapid urban growth and urbanization have altered the location of traditional economic activities and land use and housing regulations have not kept pace with this burgeoning population growth (Lopez, 1981; Trivelli, 1981; Bahr and Riesgo, 1981; Bahr, 1978).

This chapter presents complementary information about one aspect of the changing economic geography of one Latin American city the spatial organization of primary care in Santiago, Chile. By analyzing one facet of a social delivery system in a developing country, the findings and methods used can be added to the growing literature indicating that public services do not disfavor the poor in terms of service availability and accessibility. The following section describes the social ecology of Santiago so that the spatial organization of primary care can be described.

The Social Ecology of Santiago

Relative Location and History Settlement

Santiago de Chile is located in one of a series of valleys that characterize the valle central region of central Chile. The colonial core of the city is laid out in the traditional grid pattern that characterizes most Latin American cities and towns (Stanislawski, 1946; 1945). City blocks surrounding the Plaza de Armas, the main town square, have changed little since the town was designed in the sixteenth century. This nucleus lies at the foot of a small hill in the city center, Santa Lucia, which is an erosive remnant of the larger San Cristobal Hills. Originally, two branches of the Mapocho river flanked the city plaza to the north and south, but the latter branch was filled in as a public works project in the last century to facilitate travel to the center of town. At present the main thoroughfare, the Alameda, covers the former southern branch of the Mapocho River.

Santiago is a distinctively sector-shaped city. Major transport arteries extend from the old colonial center. Settlement has been contained only to the north and east of the city where a series of small hills and the Andes cordillera lie respectively. The west and south open toward the center of the valley floor and serve as the gradually evolving urban fringe of the metropolitan area.

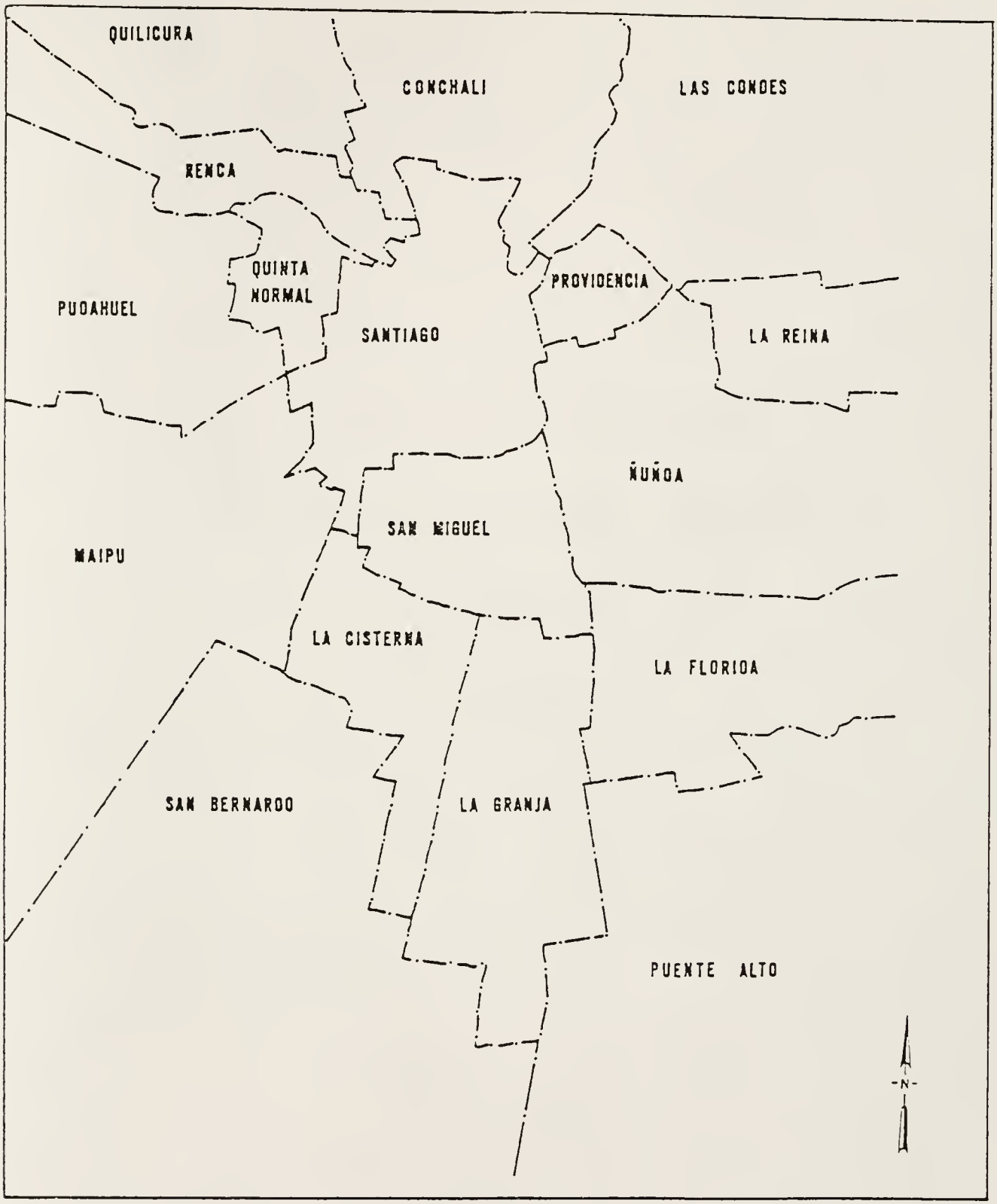

Figure 12: Municipalities of Greater Santiago

The estimated 1983 metropolitan area population of 4.4 million inhabitants of Santiago is not readily apparent. Outside of the central business district, which has grown around the colonial core of the Plaza de Armas, the adjacent municipalities have a conspicuously low skyline. Skyscrapers are confined to the city center and only recently have modern high-rise apartments above, say, 10 stories or so, begun to appear. The advent of seismic-resistant construction in the last three decades has enabled high-rise construction. Historically, the city (and nation) have been plagued with considerable seismic activity resulting from the extensive fault lines along the Pacific coast region. Consequently, the city has been rebuilt several times. Because of its relative low-density and grey concrete-veneer buildings, the city's general appearance has been compared to early twentieth century Moscow and Paris (Fuller, 1972).

The social ecology of the city changed little until the early twentieth century. At this time suburbs began opening up for high-income residents that lived near the the main plaza. These suburbs were attractive because of the increased automobile traffic in the city center, the growth of retail trade and a general loss of amenities that had characterized the traditional city core. As upper-income residents took advantage of these suburbs, a change in the residential composition of the city occurred. (Bahr and

Riesgo, 1982; Bahr and Mertins, 1982; Amato, 1970). Upper-income residents began leaving the highly regarded old-town area adjacent to the Plaza de Armas in Santiago in the 1920s and 1930s, and resettled in the municipality of Providencia. The new residential locations provided a more country-like residence where French and English style homes were built on larger acreage that was unavailable in the colonial area of Santiago.

Residential Segregation in Santiago

One facet of the contemporary social ecology of Metropolitan Santiago is the level of segregation in the city (Figure 13). Conventional methods for assessing segregation often use city directories to document home ownership and tenancy rates. In the industrial nations this method tends to show that the working class (i.e., low income residents) has higher tenancy rates than middle and upper income groups (Harris, 1984; Saunders, 1979). Such a method applied to Latin American cities produces spurious results because both the rich and poor have high levels of ownership while middle income groups tend to exhibit high tenancy rates (Gilbert and Ward, 1978; Roberts, 1978). This is because the wealthy can afford to mortgage their homes through conventional lending institutions, and the extreme poor who reside in urban slums (i.e., *callampas*, *poblaciones*, *pueblos jovenes*, *ranchos*, *favelas*, etc.) build

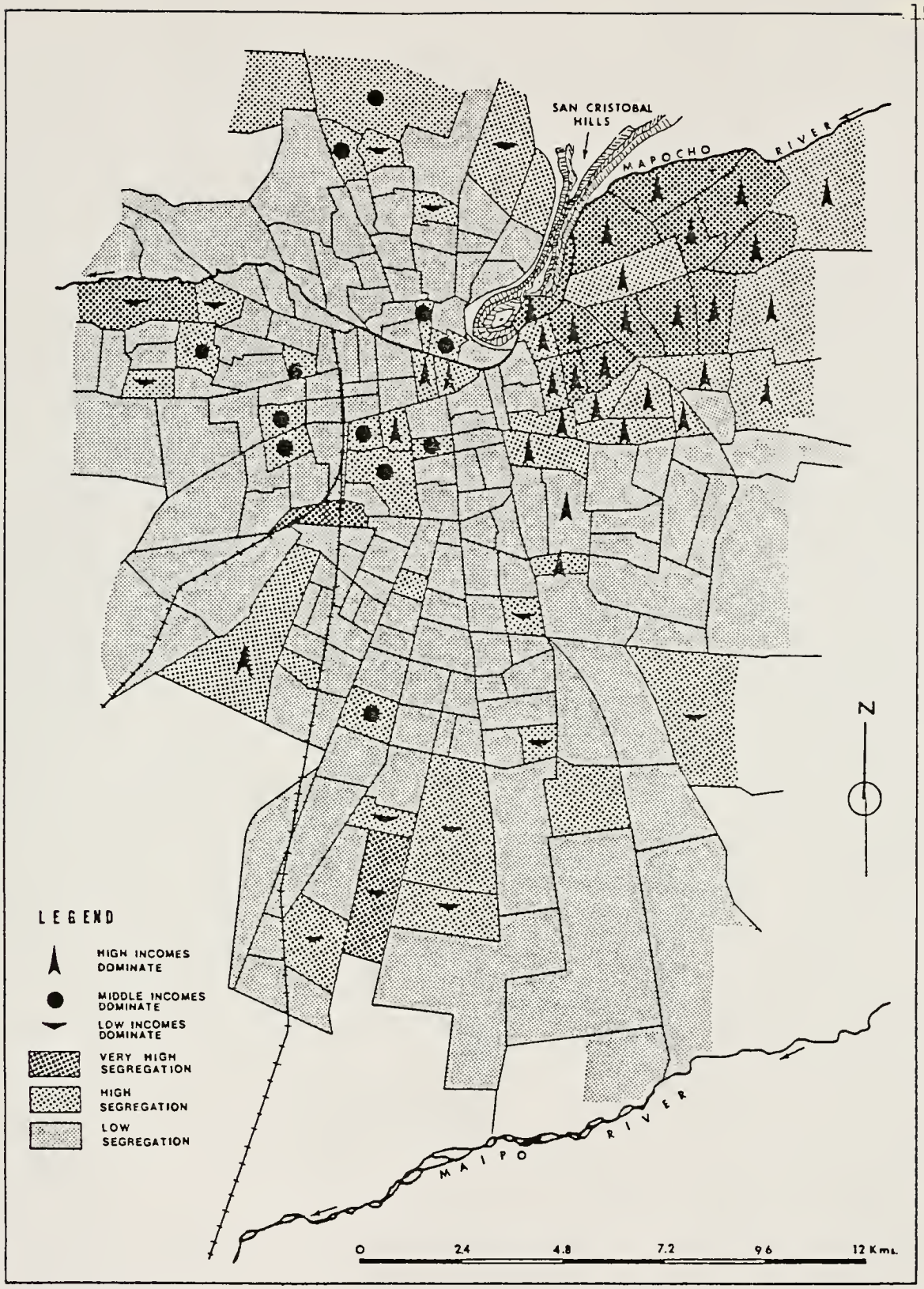

Figure 13: Income Segregation in Metropolitan Santiago, 1977

their homes from discarded or low-cost materials. Though the poor may initially occupy their home sites illegally, (through squatter invasions), there is a good chance that the land will eventually become theirs legally (Roberts, 1978; Collier, 1976).

One study (Scarpaci, et al., 1985) assessed the degree of segregation in Greater Santiago using data from a 1977 analysis of 1800 households. The metropolitan area was divided into 202 zones designated as passenger catchment areas for a public transportation study. A matrix of income quintiles (n rows) for each neighborhood (m columns) was constructed. The variance of each quintile was derived by the percentage of homes that fell into each quintile (about 40 homes per group). The range of income segregation was derived by the number of standard deviations beyond the mean of each quintile. Neighborhoods with "very high" segregation lie three or more standard deviations beyond the mean; "high" segregation falls between 1.01 and 2.99 standard deviations; and "low" segregation reflects a value of less than one standard deviation.

Figure 13 shows a high degree of segregation in the upper-income districts of Las Condes and Providencia (barrio alto) in the northeastern section of the metropolitan area. South of this highly segregated area where high incomes dominate are the middle-income municipalities of Nunoa and La Reina, where income and occupational structures are

similar to those of the Municipality of Santiago. In general, municipalities in the south (La Florida, San Miguel, La Granja, La Cisterna) and west (Pudahuel, Renca) house the lower income groups in highly segregated neighborhoods. Social distance in the metropolis is heightened by the San Cristobal Hills which separate the very poor district of Conchali from the wealthy northeastern area. Topographic barriers to the north and east (the Andes mountains), coupled with a middle income district to its south, afford the barrio alto residents with a buffer zone between themselves and the urban poor. Generally, as distance decreases from the northeast there is a concomitant fall in income levels in all directions. Few Latin American cities have high income districts like Providencia and Las Condes that enjoy such a degree of isolation from very low income neighborhoods.

Health Policy Change and Spatial Organization of PMC in Santiago

Public and private PMC delivery systems in metropolitan Santiago can be expected to change in response to these policy alterations. One outcome is that S.N.S.S. facilities will become increasingly more important to low-income workers and the poor as employer-sponsored medical programs become scarce and a worsening economic climate alters the population's health status.

The network of 64 PMC facilities in Greater Santiago is the largest supplier of PMC in either the public or private sector. These clinics deliver about 70 percent of all PMC in the metropolitan area and service an average of 47,000 patients per facility (Ministerio de Salud, 1983). This average figure, however, does reflect the wide range of service delivery because some facilities deliver care to as many as 100,000 inhabitants (Personal communication, Dr. Max Monteros, 1984). All referrals (interconsultas) are made at the clinics which are assigned to a major hospital for secondary and tertiary care. In this way the S.N.S.S. clinics serve as the main entry point into the public medical care network.

How Public Health Clinics Are Located

Procedures for locating a public clinic in contemporary Santiago do not draw heavily on tools from locational analysis nor the process of electoral demand. Although the public has not been able to request services through elected representatives in more than a decade, Ministry of Health officials contend that channels of citizen input are still open. According to the Secretary of the Metropolitan Health Service, three kinds of demand exist for locating new S.N.S.S. facilities. The first consists of spontaneous demand whereby the S.N.S.S. recognizes population growth in a segment of the metropolitan area and meets that demand by

establishing a new facility. Information about latent demand comes to the attention of the government from S.N.S.S. personnel who treat patients from areas beyond the designated service areas of a particular clinic. These areas are located along the slowly expanding "urban fringe" in the southern and western districts of the metropolis. Topographic barriers are absent in these districts and they are the only regions where major new settlement is taking place. Another source of spontaneous demand is found in areas that have received squatters from spontaneous settlement (tomas). Under the Pinochet regime, however, spontaneous colonization has been greatly limited.

A second form of demand is called public demand. Community needs for public services are expressed through neighborhood organizations called Juntas de Vecinos. These organizations are voluntary groups that supposedly represent the needs of local residents in requesting police and fire protection, primary and secondary education, sewage and public works projects, and primary health care facilities. Little research has focused on the Juntas de Vecinos which are, essentially, the only citizens group in authoritarian Chile. Work by Scarpaci et al. (1985) has shown that this organization is an effective means of keeping low-income public housing projects out of high-income neighborhoods, thus increasing the degree of spatial segregation in Santiago. Because of the role of the Juntas de Vecinos in

the housing market, there is good reason to believe that they operate with a strong class bias. Theoretically, neighborhood residents can request a S.N.S.S. clinic through their municipal government which in turn passes the request on to the National Planning Office (ODEPLAN) and the Ministry of Health.

A third manner by which S.N.S.S. clinics are located is through actions by municipal (county) mayors (alcaldes). which will be called mayoral appeal. These officials are not elected to office as this title suggests, but rather are assigned by the President of the Republic or by the Regional Military Governor (Intendente). Regardless of the three levels of demand, consumers are the least influential agents in the location of public health facilities in Santiago.

Clinic Distribution and Nearest Neighbor Index. The distribution of public clinics appears to be fairly uniform throughout the metropolitan area (Figure 14). Clinics are mostly absent from the core of the high income districts of Providencia and Las Condes in northeastern Santiago. The western areas appear to be well covered as do the northern and southern districts. There appears to be an adequate distribution of S.N.S.S. facilities throughout Santiago, especially in low-income areas. Figure 14 is a SYMVU proximal map that proximates the service areas of each clinic. A proximal map displays the clinic service area by assigning to every location the data value associated with

the nearest control point, i.e., a public health clinic (Dougenik and Sheehan, 1979). The proximal map was computer generated using the six health districts that comprise the S.N.S.S. metropolitan region. The closest clinic to any given point within a health district can be determined from this proximal map. Though the distribution of clinics appears to be uniform, the size of the service areas in the southeastern region is larger than elsewhere. Accordingly,residents within this health district travel further for care. Clinics are generally absent from the core of the barrio alto in the northeast. The western portions of the metropolis have the smallest service areas, affording low-income residents with better geographic access than other S.N.S.S. users.

One technique of point pattern analysis, nearest neighbor analysis, was used to examine whether the pattern of the S.N.S.S. clinics in Santiago is random. Because low-income neighborhoods are not randomly distributed throughout the city, it is expected that the clinics that serve them are also located in a non-random fashion.

Before discussing the nearest neighbor results, it will be useful to identify some advantages and limitations of the measure. There exists in many spatial statistical measures a boundary effect, which refers to the distance from outer areal limits to all points. The areal boundary can determine whether patterns are described as clustered or dispersed. Silk (1979, 110) notes that

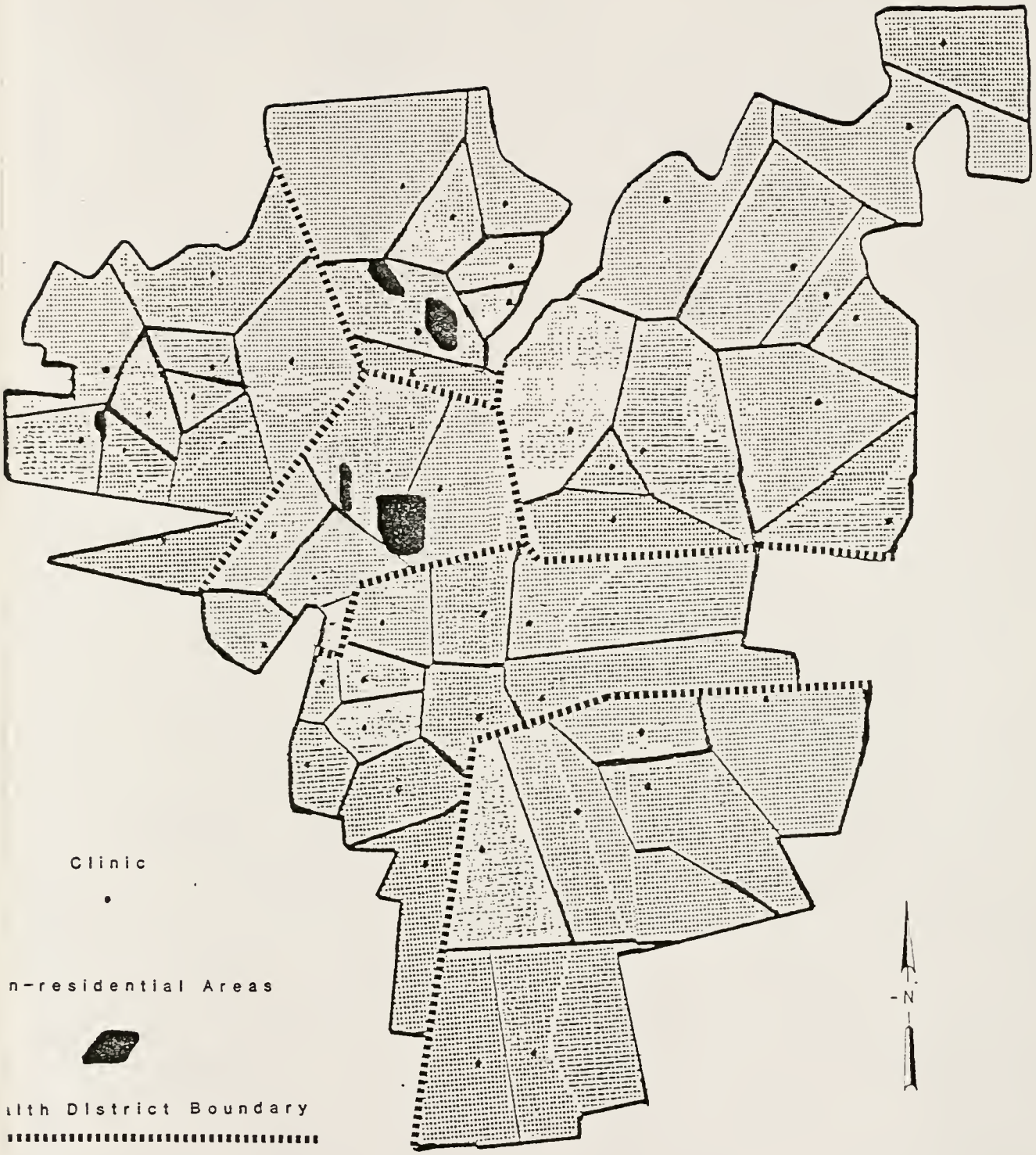

Figure 14: Proximal Map of S.N.S.S. Clinics, Santiago, 1983

> Boundaries should be drawn in a manner consistent with the subject matter under investigation . . . if the points represent retail outlets, the study should include all contiguous built-up areas at the edge of the city, and not simply follow administrative boundaries. Ideally, boundaries should be placed <u>within</u> the outermost limits of the study area . . . (original emphasis).

Boundary selection is an important component in generating accurate nearest-neighbor values. For example, if a larger study area is defined about a small, regularly spaced pattern of points, then the calculated value of R will suggest a clustered pattern (Taylor, 1977, 166). To ensure the proper measurement of the nearest neighbor index in this study of public health clinics, smaller satellite municipalities of the metropolis (San Bernardo, Puente Alto, Maipu, Quilicura) were excluded. The boundary area was drawn well within the outermost limits of the metropolitan area, excluding ten of the 64 S.N.S.S. clinics in the region. Furthermore, Donnely's adjustment measure for the boundary effect was applied (see Aplin, 1983). Values of R reported here are adjusted by the measure

$$(((.5)(NA)^{.5} + (.051 + (.041N^{-.5})L)$$

where N is the number of points
A is the area encompassing the points
L is the perimeter of the area

Following Hammond and McCullagh (1974), two hypotheses were established:

Null Hypothesis:	The pattern of S.N.S.S. facilities in Metropolitan Santiago is similar to a pattern produced by the independent random location of each point.
Alternative Hypothesis:	The pattern of S.N.S.S. facilities in Metropolitan Santiago is not random.

Nearest neighbor analysis derives an index measure of R with theoretical values ranging from 0 (meaning that all points are perfectly clustered) to 2.149 (indicating a uniform distribution pattern). A perfectly dispersed pattern would exhibit the form of a triangular lattice (Silk, 1979, 109). The measure is calculated by dividing the mean-distance nearest neighbor points in an area (D-obs), by the mean distance that would be expected from an equal number of points distributed randomly in the same area (D-exp).

Calculations (Table 20) executed by a BASIC program (Buckner, 1985) for firstand second-order (neighbor) points revealed a non-random pattern. First-order results generated an R-value of .776, indicating a clustered pattern. Silk's (1979) and Aplin's (1983) z-test produced values of -2.64 and -3.15 respectively, indicating that the distribution of public health clinics is significantly

different from that which would have occurred by a random process. Two z-tests are presented to strengthen test results. In general, Silk's measure is more appropriate when the number of points exceeds 50. The second-order analysis obtained an R-value of 1.251, indicating a pattern that tends toward uniformity. Its corresponding Silk and Aplin z-values were 2.84 and 2.06 respectively. Interpretation of second-order neighbor analysis is less straight forward because visually it is difficult to sense the proximity of each point to to its second nearest point.

Summing up, the nearest neighbor analysis indicates that the point pattern distribution of S.N.S.S. clinics throughout Greater Santiago are not randomly distributed. Different first- and second-order results show that the clinics are regionally dispersed but tend to cluster locally. In terms of the social ecology of the city described above, clinics are appropriately located in the poorer regions of the city and tend to be clustered within those indigent neighborhoods.

Measures of Accessibility to S.N.S.S. PHC Facilities.

Several methods exist in human geographic research to measure accessibility to public services. These approaches include gravity models, location-allocation models and linear programming models (Haynes and Fotheringham, 1984; Scarpaci, 1984; Swain, 1981). A number of models have been used in studying locational aspects of public health

TABLE 20

Nearest Neighbor Formula for S.N.S.S. Clinic Analysis

A) Nearest Neighbor Formula $R = d\text{-}obs / d\text{-}exp$

where $d\text{-}obs = 0.5 / (N/A)^{0.5}$

R is nearest neighbor statistic

d-obs is the observed mean nearest neighbor distance

d-exp is the expected mean nearest neighbor distance

N is the number of points

A is the area within the set boundary

B) Silk's Z-test Formula $Z = (D\text{-}obs / D\text{-}exp) / SE_{D\text{-}obs}$

where $SE_{d\text{-}obs}$ is the standard error of expected mean nearest neighbor distance, or $0.26136 / (N^2 / A)^{0.5}$

Substitute 0.75 for second-order analyses.

C) Aplin's Z-test Formula $Z = (R - 1) / SE_R$

where SE_R is the standard error of R, or $0.5228 (N)^{-0.5}$

Substitute 0.3630 for second-order analyses.

Source: Aplin (1973), Silk (1979) and Hammond and McCullagh (1974).

facilities in the United States (Calvo and Marks, 1973; Earickson, 1970; Morrill et al., 1970). In general, these methods have addressed the spatial behavior of patients in laissez-faire medical markets and the efficiency of delivery systems. These methods are useful in addressing questions of equity to health services and the measurement of accessibility of physician care to consumers (Kirby, 1983; Hodge and Gatrell, 1976; Monroe and McGrew, 1975; Morrill, 1974; Symons, 1971).

A modified version of the gravity model (Harris, 1954) is especially relevant to the present study of primary care in Santiago because it includes a distance-decay parameter and measures the potential accessibility or attractiveness of clinics. Attributes of nodal accessibility to S.N.S.S. clinics are contained in a simple index derived from the gravity model.

$$Ai = \sum_{i=1}^{n=54} Dij^{k}$$

where

Ai is the summary index of accessibility to clinics at point i
Dij is the distance between clinic i and j
k is the distance-decay function denoting the fall-off in attendance to a given facility
n is the number of clinics

Three measures of accessibility were used in this study, each building upon the other. The first and simplest accessibility surface incorporated the above measure of

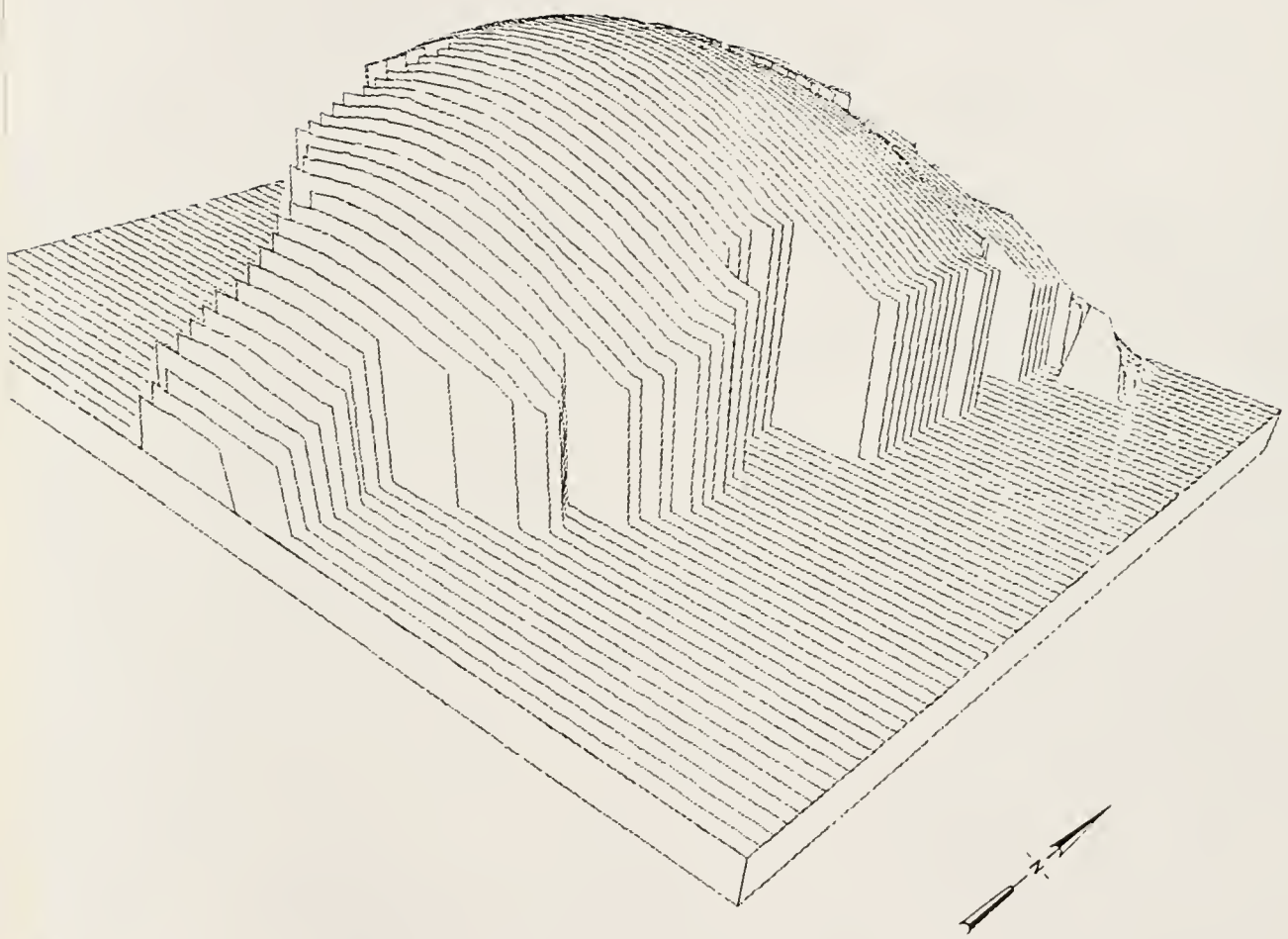

Figure 15: Potential Accessibility Surface to S.N.S.S. Clinics

accessibility. This mapping of potential accessibility surfaces to S.N.S.S. clinics was derived by summing the squared distances to the 54 clinics from each of 394 points. The 394 points were derived by taking a systematic sampling at regular intervals from a 28 by 28 grid superimposed over the city. Points falling within the specified city limits were used to map a city-wide accessibility surface. Greater accessibility is given to those clinics located in the city center while those on the periphery receive less. Accordingly, Figure 15 shows a convex accessibility surface that rises towards the center of the metropolitan area and then gradually declines toward the periphery. Little variation is noted in the surface because a numerator S (medical hours worked weekly) is not included in the index. For all practical purposes, therefore, Figure 15 highlights the "loss" of information that results from not weighting clinics with some attribute other than distance.

A second mapping weighted clinic accessibility by incorporating the number of surgery hours worked at each clinic (Knox, 1979; Smith 1977; Symons, 1971). Adding a numerator to the accessibility measure, the computation is based on

$$Ai = \sum_{i=1}^{n=54} \left(\frac{Sj}{Dij^{k}} \right)$$

where

Ai is the summary index of accessibility to clinics at point i
Sj is the size of the clinic measured by the number

of physician hours worked weekly
Dij is the distance between i and j
k is the distance-decay function denoting the fall-off in attendance to a given facility
n is the number of clinics

Accessibility surfaces show that disparities do exist among some S.N.S.S. facilities (Figure 15). Southern municipalities in the metropolitan area (La Florida, La Granja, La Cisterna) have less accessible clinics than most of the metropolis. In contrast, the large low-income districts in the western metropolitan area (Pudahuel, Renca) fair relatively well and appear to be "over-doctored" areas. No bias is seen in the middle- and upper-income municipalities of Providencia, Las Condes, La Reina and Nunoa; their potential accessibility is no greater than the metropolitan area in general. This measure of accessibility to primary care, therefore, representing one indicator of the geography of wellbeing (Knox, 1980) in Santiago, indicates both relative cases of "over-doctored" and "under-doctored" areas, but not totally at the expense of either poor or wealthy districts. However, some inequality in primary medical care in cities is inevitable because health care facilities are discretely located amongst a continuous population (Knox, 1979, 165).

Because accessibility according to the above indexes is defined as a function of distance to clinics, it is important to recognize the various results generated by the distance-decay parameter, k. A value of one was assigned to the two previous accessibility surfaces shown in Figures 15

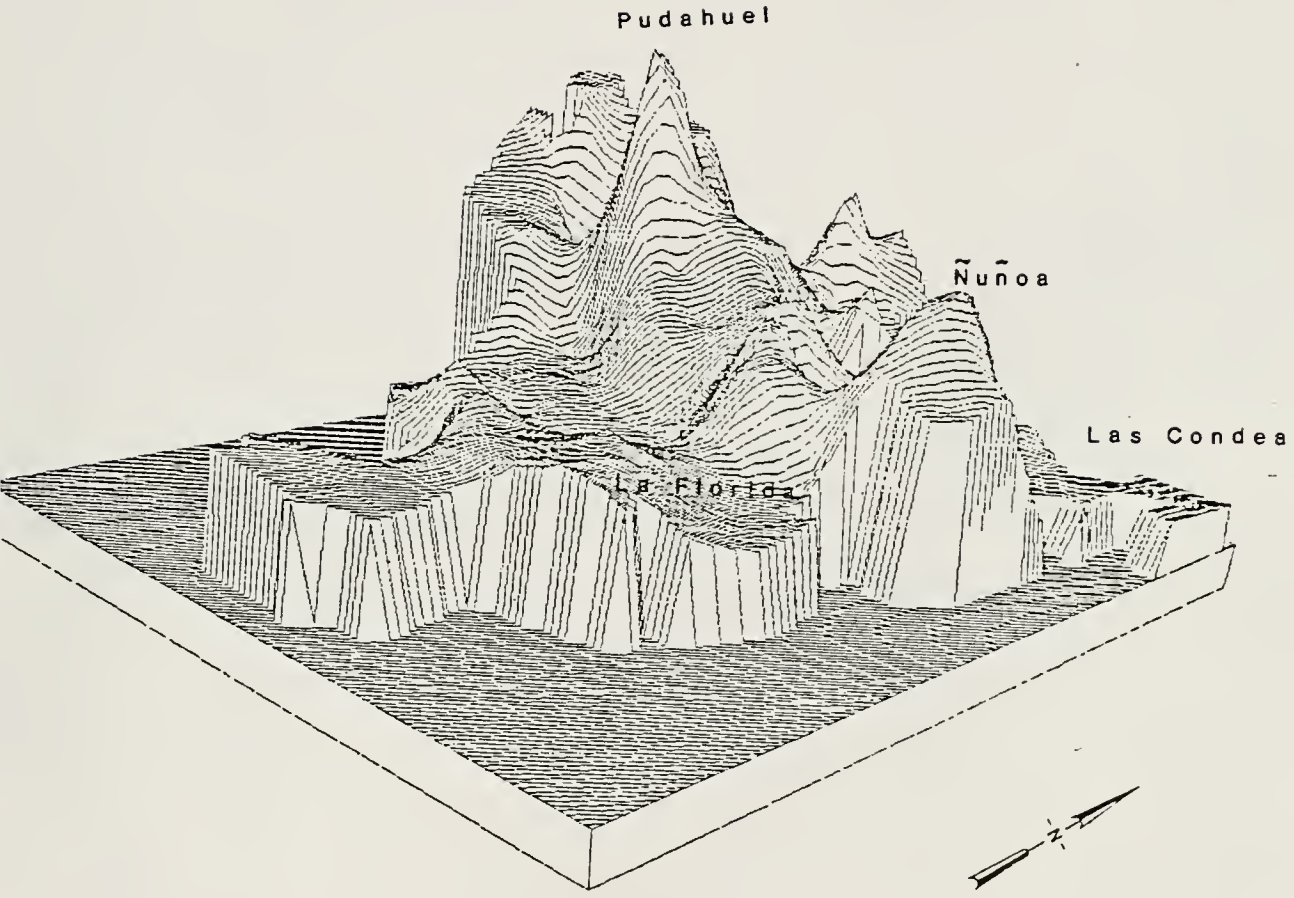

Figure 16: Potential Accessibility Surfaces Among S.N.S.S. Clinics

and 16. However, different surfaces can be produced as the value of k changes. The rationale behind the weighting of distances is illustrated by the following example. If a particular point were equidistant from two points, say clinics A and B, and clinic B offered more hours of medical care (S), then one would expect potential interaction to be greater at the larger facility (Fotheringham, 1979, 197). The resultant Ai value will vary with distance-decay parameter k. A small value of k (0.5) will emphasize general effects of clinic proximity while a large value of k (3.0) highlights local effects of a clinic's relative location.[1] The accessibilty surfaces calculated with several measures of k were generated by the following

$$Ai = \sum_{i=1}^{n=54} \left(\frac{Sj}{Dij^{k}}\right)$$

where

Ai is the summary index of accessibility to clinics at point i
Sj is the size of the clinic j measured by the number of physician hours worked weekly
Dij is the distance between point i and clinic j
k is the distance-decay function denoting the fall-off in attendance to a given facility
n is the number of points across the city surface

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[1] A value of 1.0 is frequently used in specifying distance-decay parameters (k). Knox (1979, 1978) used a value of 1.55 which was specified by Hopkins et al. (1968). This parameter was generated from a regression model of the fall-off rate in clinic attendance among a sample of British facilities.

Figure 17 illustrates the changes in the accessibility surfaces when k=0.5, 1.0, 1.5, 2.0, 2.5, and 3.0. The local effects caused by the larger distance-decay parameters produce a more differentiated surface than the smaller parameters. These former parameters highlight the local effects of two or more clinics being located fairly close to each other. As was illustrated by the second accessibility mapping (Figure 16), the western areas show the highest indexes of primary medical care accessibility. This finding points out the need to increase the number of physician hours or facilities in the low-income municipalities of La Cisterna, La Granja and La Florida.

Summing up the discussion on the SYMVU proximal map, nearest neighbor analysis and accessibility surfaces to S.N.S.S. facilities, several common points were identified. Southern portions of the metropolis have larger service areas and are under-served vis-a-vis other clinics. Accessibility surfaces in Figures 16 and 17 consistently revealed "valleys" in the southern portions, regardless of the distance-decay parameter used. In contrast, the western municipality of Pudahuel has the smallest service areas as well as the highest "peaks" on the accessibility surfaces in Figures 16 and 17. The western and, to a lesser extent, the central municipalities (Nunoa, San Miguel and Santiago), offer greater accessibility because of the number of physician hours provided and the smaller service areas found

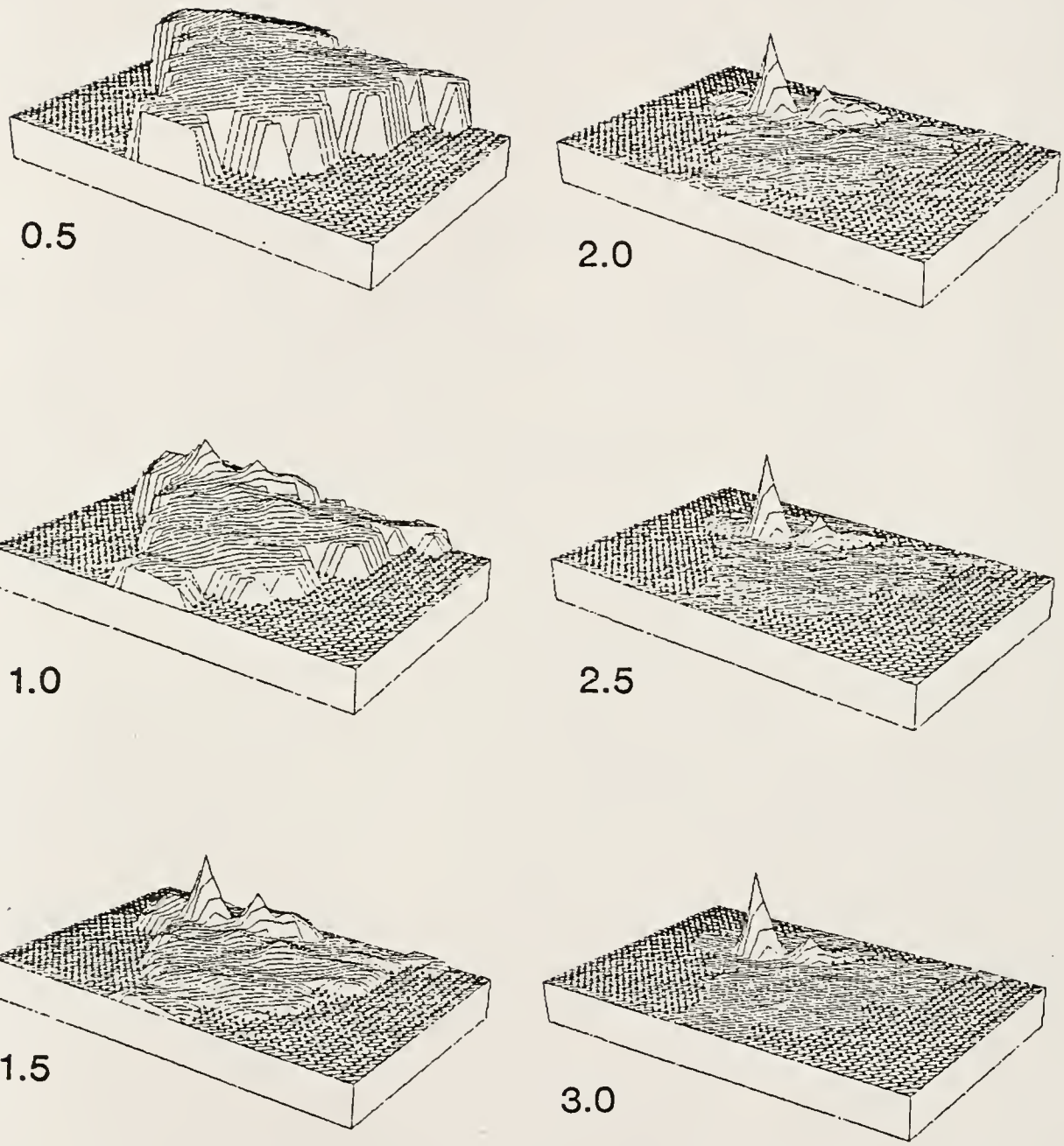

Figure 17: Accessibility Surfaces to EMC with Various Distance-Decay Parameters (K)

there. The analysis provided here offers one departure point for improving accessiblity to S.N.S.S. facilities by establishing new facilities or, the less expensive option of increasing physician hours at target facilities.

Distribution of FONASA General Practitioners. Another important source of primary medical care in Santiago is provided by physicians who participate in the FONASA program. This semi-public medical system provides between one-quarter and one-third of all primary care in the city.

Two sources exist with regard to the location of doctors' offices in the FONASA program. One data source exists from 1978, the last year of operation for SERMENA, the predecessor to the FONASA system. SERMENA was divided into two versus the three levels of care that characterized FONASA in 1983. While these levels of care carry different costs (Level One being the least expensive) this price difference does not reflect the professional competence of the provider. Instead, amenities such as the comfort of the waiting room and waiting time vary. As of 1983, however, the list of FONASA physicians has merely been updated by new physicians entering the FONASA system or by former SERMENA physicians changing their affiliation from one level of care to another. Figures 18 and 19 show the distribution of SERMENA physicians in 1978 and FONASA physicians in 1983, respectively. Together, both maps provide a reasonable representation of the distribution of physicians affiliated

with FONASA in 1983 (Personal communication, Ernesto Miranda, FONASA, October 1983).

FONASA physicians are generally located in the center of Santiago with three pronounced clusters near transport arteries and major hospitals. The first concentration is found between the Catholic University and Salvador Hospital. Another cluster can be seen along the main thoroughfare, the Alameda, which runs westward above the underground subway system of Santiago, the Metro. The third grouping of FONASA general practitioners is somewhat less dense. Lying north of the central business district and separated by the Mapocho River, this concentration is found along Independencia and Recoleta Avenues. Several major hospitals are found in this part of the city, including the large teaching hospital at the medical school of the University of Chile.

In short, FONASA general practitioners are clustered in the geographic center of the city where there is considerable proximity to large hospitals as well as the vast majority of public and private white-collar workers (empleados) who patron their services. Unlike the pattern of S.N.S.S. clinics, FONASA general practitioners are not dispersed throughout the residential areas of their patients, but rather have a relative location that maximizes their accessibility to hospitals and patients.

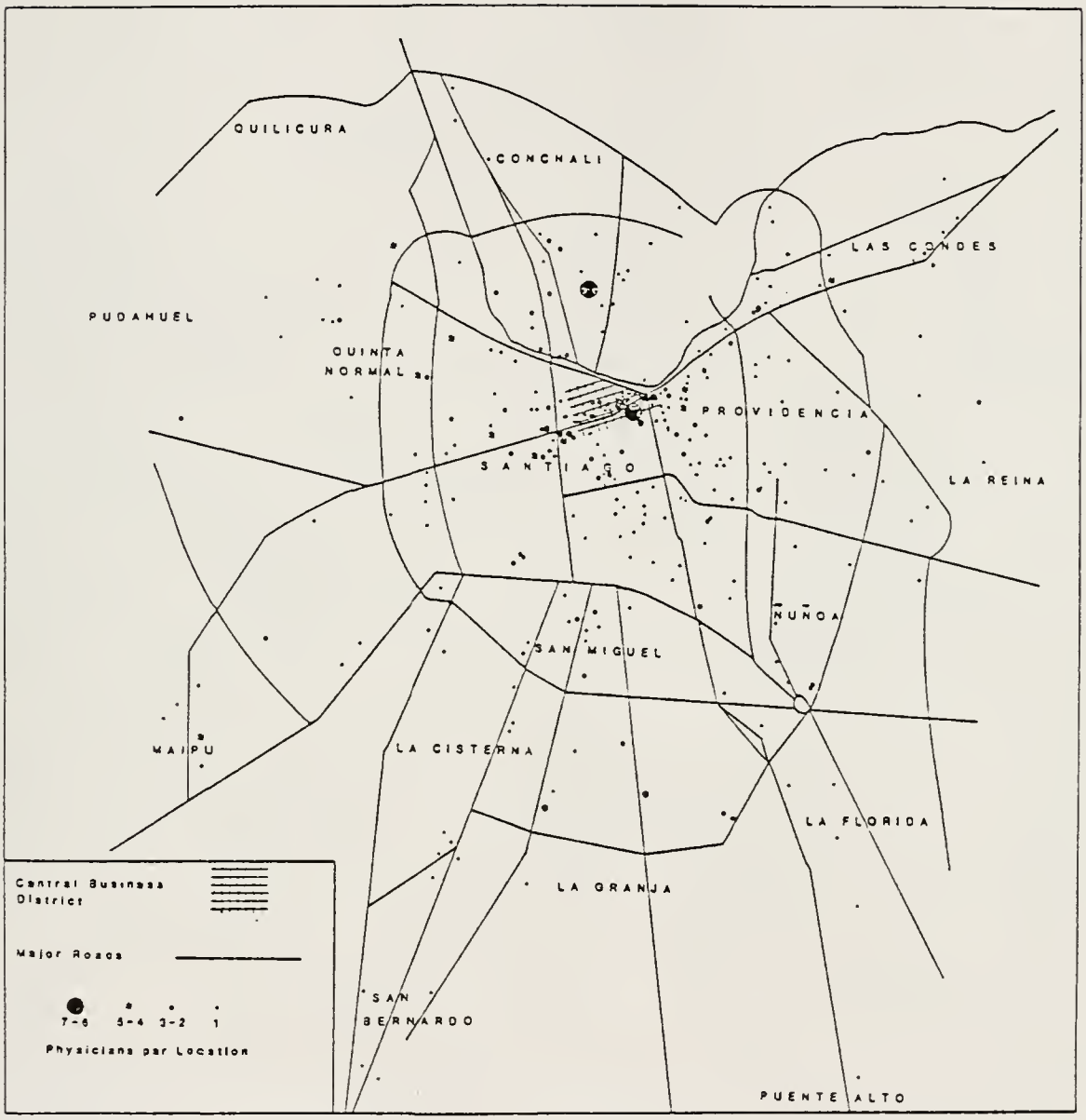

Figure 18: Distribution of SERMENA Physicians, 1978

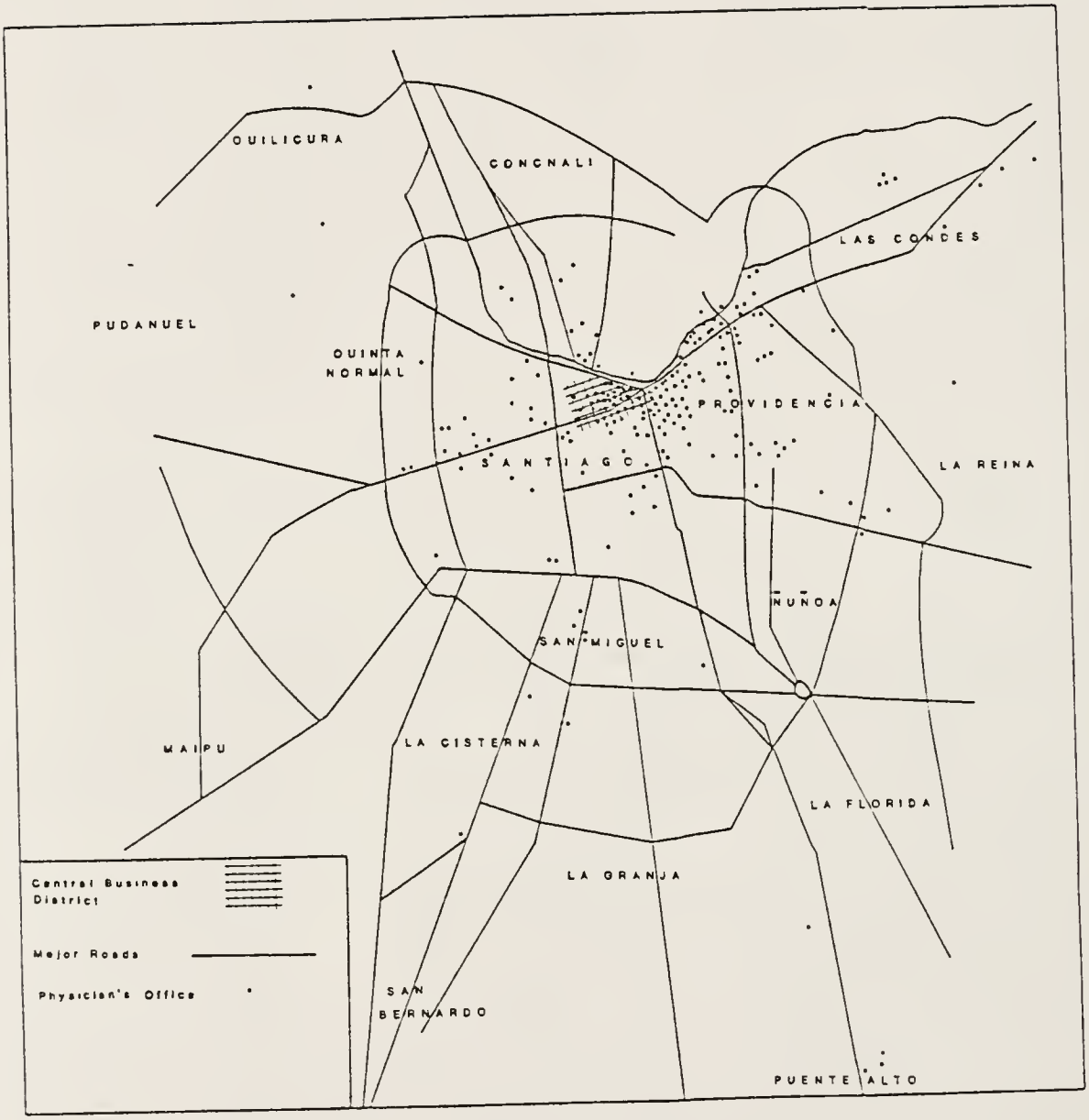

Figure 19: Distribution of FCNASA Physicians, 1983

Distribution of FONASA Specialists. The spatial distribution of any professional group such as physicians, lawyers and accountants, provides insight into the social ecology of the city. In the free marketplace, professionals select office locations in response to factors that are shaped by the forces of competition and oriented toward user demand. Two types of FONASA specialists were selected to determine whether different distributions exist between FONASA specialists and general practitioners. Plastic surgeons and critical care medicine doctors[2] were selected as two highly specialized types of medical practice. Given these highly specialized areas of medicine, it was expected that these physicians' private practices would be located between hospitals where they held staff privileges, and high income neighborhoods where they or their patients reside. Both Figures 20 and 21 illustrate this expectation. The two specialists groups are concentrated in the barrio alto, clustering between the major hospitals in the dowtown area (where FONASA general practitioners are clustered) and the residences of their high-income clientele. Moreover, their

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[2] The translation for critical care medicine is taken from the Spanish term cuidado intensivo. Literally, it translates as "intensive care." When U.S. physicians are working in critical or intensive care units, they tend to be unit directors who are anesthesiologists. The type of medical specialty is best described as critical care medicine. It is most common in large teaching or public hospitals. The author is grateful to Stephanie Tison, R.N., of Alachua General Hospital, and Mark Walsh, B.T. of the Veterans Hospital, Gainesville, Florida, for their clarification of this term.

"uptown" location is reached by the main thoroughfare of Providencia Avenue, a continuation of the Alameda running through the city center. Providencia Avenue also covers the Metro, thus providing patients convenient access to specialists' offices by automobile or rail travel. The location of this sample of FONASA specialists in pleasant high-income neighborhoods in the Santiago suburbs is similar to the pattern observed by Rosenburg (1979) in his study of physicians in Toronto, Canada, granting, therefore, more grounds to our comparison between Chile and Canada.

Distribution of Medical Centers

Although the private medical market is small in Chile, it is expected to grow as the state provides the legal framework for private medical care, and cuts back on public-financed medical care. Many practitioners in the private medical sector have arrangements (convenios) FONASA, ISAPREs and other medical programs. Because of the recent creation of many of these programs, the distribution of private physicians to be described will serve as a "snapshot" in the early stage of a possible boom, bust or stabilization of the private medical market in Chile under the restructured medical system.

One phenomenon of western medicine is private medical centers that provide a wide array of in-house services ranging from general practitioners and specialists, to a

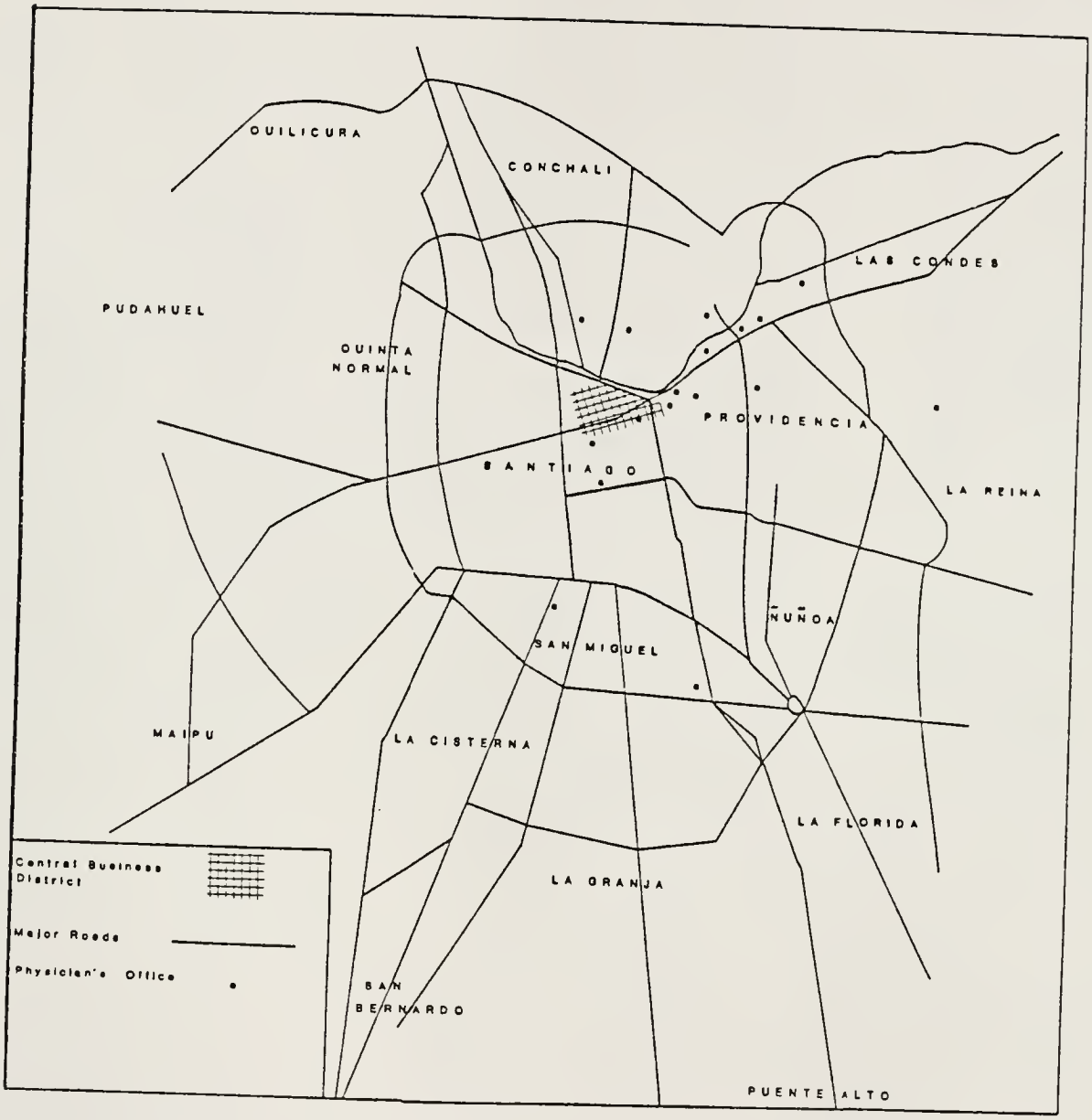

Figure 20: Plastic Surgeon Offices, PONASA, 1983

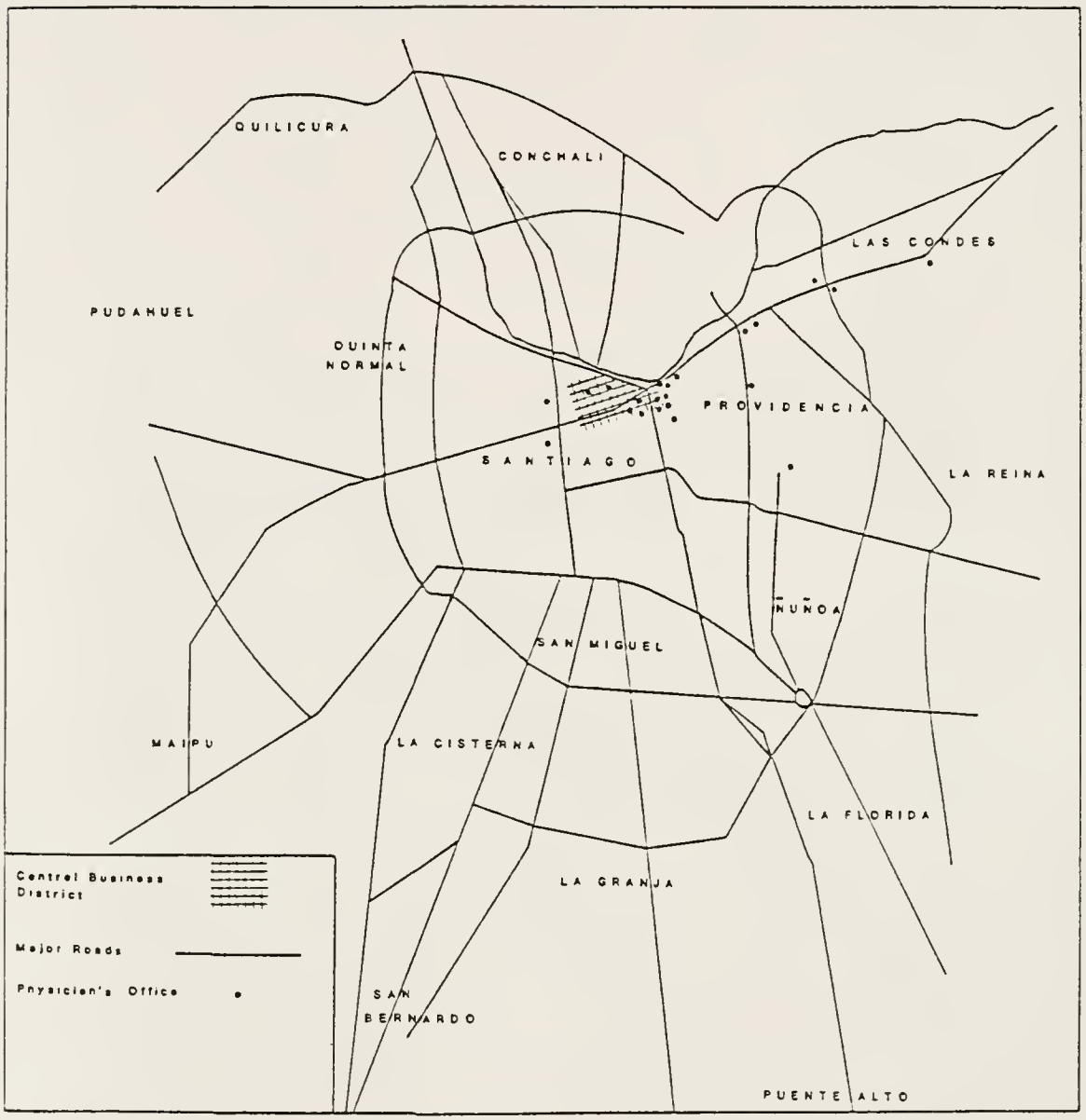

Figure 21: Critical Care Medicine Doctor Offices, FCNASA, 1983

gamut of laboratory procedures. This is a common feature in both North American and Chilean private medical practices. A major advantage of these centers is the concentration of many services in a single location. Evidence from the U.S. suggests that private medical centers can generate some economies of scale (particularly with lab services) that ultimately result in lower real costs. In addition, they need not depend on outside laboratories or specialists (Roemer and Schonick, 1973; Falk, 1963).

The potential savings generated by group practices, however, are not always passed on to the consumer. A number of researchers have argued that there is an easy and tempting opportunity to request excessive and possibly even duplicative services (Kirkham, 1977; Baehr, 1966). While many of these potentially excessive services are in response to the threat of malpractice litigation against physicians, some of these services generate additional income for practitioners if they are partial owners of the clinic or participate in profit sharing. This is not, however, the case with HMOs since there is little or no fee-for-service care.

Studies related to the distribution of medical centers in Santiago are fairly new, receiving impetus from the free-market changes initiated by the Pinochet regime. One of the first of these studies was done by Jimenez de la Jara (1982b) who documented the growth of physicians advertising

in the Metropolitan Santiago telephone directory between 1975 and 1982. The number of medical centers, many of which are actually small private hospitals, grew by 145 percent in this period. This growth was concentrated in the upper-income neighborhoods of Las Condes and Providencia. Jimenez de la Jara also compared the financial "survival rate" of private ambulatory care and in-patient facilities. He concluded that

> the strictly private hospital operating as a normal private enterprise, has costs that surpass its revenues and which quickly place the firm in economic insolvency . . . the private health care firm that works with diagnosis and ambulatory care has, conversely, a quick return on its initial investment and generates easy capital for its owners, who are usually physicians (1982b, 187; author's translation).

Free-standing private ambulatory centers, therefore, are located in high-income districts as would be expected in the private medical marketplace.

The relationship between the location of private medical centers and the economic status of the municipality where they are located was assessed by a Spearman's Rank Correlation test. Although this test is not as powerful as the Pearson Product Moment Correlation test, it does have about 91 percent of its power (Hammond and McCullagh, 1974). It could not be assumed that income was normally distributed. Thus, the non-parametric Spearman test was used.

The rank order of the municipalities containing private medical centers was correlated with both the rank order of the 1983 average family monthly incomes of the municipalities where the private centers are located, and the municipal income (mean income multiplied by municipal population) (Table 20). It was assumed that there would be a strong and positive relationship between the presence of private medical centers and mean family monthly income and total municipal income. This relationship was confirmed by a coefficient of .732 at the 95 percent confidence level for both income measures.

Distribution of Solo Private Physician Practices

A recent study carried out by Arze (1984) at the Catholic University of Chile analyzed both changes in the location of solo physician practices from 1950 to 1980 and the reasons for physicians selecting office locations in 1983. The data base was taken from a 50 percent systematic sample of the Santiago telephone directory physician listings in 1950 and 1980. During the 30 years, physician practices have apparently dispersed from the city center towards the east and northeast. In 1950, 83 percent of all physicians were located in the municipality of Santiago with only 10 percent in the municipality of Providencia. By 1980, this proportion of physicians shifted to 40 percent and 28 percent respectively (Arze, 1984, 197). Although

TABLE 21

Medical Centers and Income Levels by Municipality, 1983

Municipality	# (a)	Santiago/ Municipality Ratio (b)	1983 Monthly Income* (c)	1982 Pop. (000s) (d)	Municipal Income (in billions) (e) (c) x (d)
Santiago	150	1.0	10,411	619.1	6.4
Providencia	87	4.1	25,006	114.8	2.9
Nunoa	25	14.5	8,681	421.9	3.7
Las Condes	21	17.2	18,681	262.9	4.9
San Miguel	13	27.7	4,352	359.0	1.6
La Florida	9	40.0	7,287	191.3	1.4
La Cisterna	9	40.0	5,170	360.1	4.9

* Mid-year value of Chilean pesc.

Note that 1982 population and 1983 income data do not include the new municipalities that were canvassed for the 1982 census, and were established in 1984.

Facility Data: Unpublished materials from the National Health Service System, March 1983, Santiago, Chile; Income Data: Unpublished materials from the Department of Economics and Administration, University of Chile. Population data: Viviendas y Poblacion por Area Urbana y Rural, segun Provincias y Comunas, Region Metropolitana de Santiago. Santiago: INE, Censo 1982, p. 20.

physician location has changed, Arze was not able to conclude whether medical doctors had dispersed more than the general pattern of settlement without further analysis.

To determine whether physicians were changing their office locations from the city center to the suburbs at the same pace as the general suburbanization of the metropolitan population, a test was set up. A coefficient of localization (also called the Index of Dissimilarity) was calculated using Arze's physician data from her 1950 and 1980 telephone directory samples. The measure (Table 21, Panel A), a type of Gini coefficient, measures a particular phenomenon across a region relative to a base magnitude (Joseph and Phillips, 1984, 98; Lloyd and Dicken, 1968). The coefficient of localization is used here to measure the locational concentration of private physicians. Values range from 0.0 to 1.0. A value of 0.0 indicates that physicians are distributed throughout the study area in exactly the same proportion as the general population. A value if 1.0 would occur only of physicians and the population were located in mutually exclusive sets of areas (Joseph and Hall, 1985, 152). Joseph (1982) has found the coefficient of localization to be sensitive to the underlying population distribution. In addition, it is important to note that the localization of concentration is a measure of concentration relative to its base base magnitude and not one of absolute concentration (see Joseph

and Phillips, 1984; Joseph, 1982; and Isard, 1960 for a more in-depth review of the strengths and weaknesses of the measure).

A comment on the interpretation of the Santiago results should be noted here. First, the results are influenced to a great deal by the presence of only one doctor in Las Condes in 1950, resulting in a 28-fold increase by 1980. Second, the results are based only on population and physician concentration within the five core municipalities. Although a larger data set may generate different results, the municipalities are included because they encompass the effective private medical sector. The following results should be considered with these caveats in mind.

Localization coefficients of .257 and .436 were calculated for 1950 and 1980 respectively (Table 21, Panel B). Unlike the U. S., physicians in Santiago have become more spatially concentrated during the post-World War II period. The coefficient of localization test suggests that in 1980 private physicians who advertise in the telephone directory were almost 70 percent (.436/.257) more concentrated than in 1950. This strong concentration is similar to Rosenberg's study (1983) of the concentration of physicians in Toronto between 1951 and 1971. Given the experiences of physician concentration in Canada, Chile and the U.S., more research is needed to determine whether the free market forces of the "private" U. S. medical

marketplace act as a greater agent of dispersion than in the more "socialized" medical systems of Canada and Chile. The findings of this chapter suggest that this is the case.

Arze (1984) also surveyed 22 physicians with solo practice in Santiago about the locational attributes of their offices. The survey results ranked the most important locational attributes as follows: "proximity to the subway," "closeness to support facilities (laboratories)," "good (non-rail) public transportion," "an absence of noise," and "proximity to major transport arteries." This ranking indicates that both attributes important to the practitioner (quiet places) and the consumer (good transportation) determine the location of solo practitioners in Santiago. In general, these attributes of physician location in Santiago are quite similar to the North American pattern.

TABLE 22

Coefficient of Localization Results

A)

$$CL_d = 0.5 \sum_1 \left| \frac{M_i}{\sum_1 M_i} - \frac{P_i}{\sum_1 P_i} \right|$$

where CL_d is the coefficient of localization for private physicians in the Santiago Metropolitan Area

M_i is the number of private medical doctors with an office in area i

P_i is the population of area i

B)

Municipality	1950 Doctors (M_i)	1952 Pop. (P_i)	1980 Doctors (M_i)	1982 Pop. (P_i)
Santiago#	347	515,800	194	619,105
Providencia	44	54,459	158	114,105
Las Condes	1	27,056	28	262,919
Nunoa#	18	91,303	25	421,870
San Miguel	1	99,799	10	359,030
	$\sum_i M_i$ 411	$\sum_i P_i$ 788,417	$\sum_i M_i$ 415	$\sum_i P_i$ 1,777,694

1950 CL_d = .257

1980 CL_d = .436

#In 1952 boundaries were kept to ensure a valid comparison over the time period. Thus, Nunca includes data from La Reina in 1980 and the old Santiago boundary

(Table 22, continued)

that was along Vicuna MacKenna Avenue was kept for the latter year. It was important to make this boundary adjustment since many physicians locate near Vicuna MacKenna and Providencia Avenues.
Data sources: Population data from INE (1952, 1982). Physician data from Arze (1984).

Health Policies and the Spatial Pattern of Physicians in Canada

Milton Roemer (1977b) classified the Canadian medical system as a mixture of the traditional welfare state, where the state ensures that universal medical coverage exists, and the socialist state where private medical practice is virtually non-existant. Canada experienced a fundamental change in health care financing in the 1950s when a large portion of the medical system was passed on to state control. Initially, Canadian provincial governments paid one-half of the costs of all medical care and the national government paid the other half. The purpose of this financial arrangement was two-fold: (i) to slow down the rise in medical costs; and (ii) to provide service to the medically indigent. The current financial arrangement in Canada has changed from the early days of the 1950s. Today medical care funds are allocated by block-grants and provincial governments manage these funds under broad national guidelines. In Ontario, for example, the provincial government pays 90 percent of the costs of

medical care, while the consumer pays the rest. The proportion of funds paid by the provincial governments vary slightly (Rosenberg, 1983).

Most studies on the location and distribution of physicians in Canada have been at the regional level (Thrall and Tsitanidis, 1983; Rees et al., 1976; Spaulding and Spitzer, 1972). This body of literature has examined the significance of patient origins, costs of travel to medical care and the location and growth of physician services.

Bottomley (1971) carried out pioneer work on the intra-urban spatial behavior of Canadian physicians. He asked 20 general practitioners and 20 specialists to rank seven criteria that might affect the attractiveness of doctors' offices. General practitioners, who depend very little on high technology facilities found in hospitals, said that residing within five minutes from a hospital was the least important attribute of their locations. Good access to public transportion was seen as the most important spatial attribute of general practitioners' surgeries. The same seven criteria provoked very different responses from the 20 specialists in Bottomley's study. On the one hand, specialists said that accessiblity to public transportation was the least important attribute of their practices whereas proximity to hospitals was the most important locational feature. The significance of Bottomley's study is the relative importance of non-monetary factors in the location

of physicians' offices. This type of research underscores the importance of locational attributes in the delivery of medical care when the price of medical care varies little within physician specialty. Moreover, it can be seen that even when competition among physicians is not primarily a function of the cost of certain services (and supply and demand forces are therefore mitigated), certain factors will still dictate their relative location in cities.

Other studies on the location of physicians' offices in Canada have not followed a behavioral approach similar to Bottomley but instead have described the existing pattern of physicians by type of specialty. Spoerel (1973) determined that specialists in Ontario typically located their practices in urban centers between two major hospitals. This location gave them equal access to hospitals where they had staff privileges. General practitioners, however, were more evenly distributed throughout the metropolitan area. Rosenburg (1979) observed physician locations in Toronto and concluded that they tended to concentrate in higher income neighborhoods. These neighborhoods had amenities such as wide avenues, low incidences of crime and little traffic congestion. Highly regarded sites for physician locations were those neighborhoods that had these amenities but were also relatively close to major hospitals. Rosenburg noted that between 1951 and 1971 the distribution of physicians in Toronto paralleled the gradual suburbanization of the

metropolitan region. His nearest neighbor analysis showed that physician practices became less clustered between 1951 and 1971, the number of locations decreased (with more multi-physician practices per location), and the number of physicians increased. The 20 year trend revealed a decline in solo practices as physicians opted for group practices in more aesthetically pleasing neighborhoods. However, it should be noted that although Rosenberg concluded that physicians' locations in Toronto are becoming less concentrated, the nearest neighbor value of R changed only from .327 in 1951 to to .481 in 1971 (Rosenberg, 1983, 5). Such low R values denote a very clustered pattern in both time periods.

Health Policies and Spatial Urban Pattern of Physicians in the U.S.

Schultz (1966) first outlined the expected points of access to primary medical care within an optimum hierarchy of physician services as might be expected from central place theory. However, he found that the location of physicians cannot be characterized in this manner ever when the assumptions of price and supply of physicians are relaxed from the hypothetical case anticipated. The reality of urban America and physician behavior are far from this geometrical ideal. A number of factors account for the deviation from this theoretical pattern of physician locations. American physicians operate as oligarchs which

distorts this geometric ideal. Their oligarchic behavior is evidenced by the 1) use of their main professional association which represents just over half of all physicians (the American Medical Association) to control the legal environment in which they work; 2) establishment of admissions criteria for medical schools; 3) determination of licensure criteria for their peers and auxiliary personnel. Collectively, these factors partially explain why pure competition does not exist in the American medical market. In addition, Federal price ceilings exist for Medicaid and Medicare programs and private insurance carriers have established price guidelines which have some bearing on the costs generated in the medical marketplace. Since 1983, Medicaid and Medicare programs have different hospital price schedules (for acute care) for seven regions in the U.S. These federal health insurance programs operate using DRGs (diagnostic related groups) which are comprised of 468 different resource-use clusters. If providers, mainly hospitals, can deliver care at costs less than that stipulated by the DRG, then they are reimbursed and the difference is kept as a savings. If their costs exceed the DRG, then the loss must be incurred by the provider. These DRGs are the latest government plan to hold down health care costs (DRGs?: How are they stacking up?, 11 March 1985; Profitable American Hospitals, 18 May 1985).

State intervention in the U.S. medical market increased in the post-World War II period as evidenced by the Hill-Burton Act (1945) and the creation of Medicaid and Medicare (1965). These programs attempted to increase hospital coverage in rural areas and reduce financial costs for the poor and elderly respectively. In a parallel trend, there was also a plethora of evaluation research on these programs. Hill-Burton funds did increase the number of hospitals in rural America but the Medicaid and Medicare legislation has had more questionable results. Despite government and private insurance intervention in the U.S. medical marketplace, it still remains the largest "private" medical market in the world (Roemer, 1977b).

Although Medicaid sought to provide basic medical services for the poor, physicians clearly did not rush to set up medical practices in poor inner city areas (Cugliani, 1978). Somewhat unexpectedly, the urban poor have been treated in increasing numbers in out-patient clinics and emergency rooms of large public hospitals. These facilities have become the "doctors' offices" of the urban poor of America--an outcome not anticipated by the writers of the 1965 legislation.

Research by Luben et al. (1966) and Schneider (1967), whose foci are tied to the the distance decay paradigm in explaining the location of physicians, argue that specialists in the U.S. seek to minimize distance between

the hospital and their private practices. General practitioners, on the other hand, wish to minimize distance between their homes and their practices if they do not have hospital duties. In contrast to the distance decay paradigm, De Vise (1971, 1973) posits an ideological explanation of physician location. Despite the service orientation of their profession, De Vise contends that physician ideology limits the number of physicians that set up practices in under-served areas where the poor and minority groups reside. Physicians seek to maximize their incomes and recuperate as fast as possible opportunity costs incurred during their medical training. Their professional behavior is aligned with their upper middle-class backgrounds and their efforts to maximize profits verifies this. Although government attempts to establish financing schemes such as Medicaid, Medicare, and Hill-Burton have not substantially altered physician behavior in the 1960s (Derbyshire, 1969; Rayack, 1964), there is some evidence that HMOs are forcing physicians to be more price conscious (Homer, 1982).

Studies subsequent to the initial research of the seminal Chicago Regional Health Program have extended research findings on physician locational patterns. Shannon and Dever (1974) studied the regional patterns of physician location in the U.S. and documented the flow of physicians to the "sunbelt" region, particularly high-income

metropolitan areas with large research and teaching hospitals (e.g., Atlanta, Houston, Chapel Hill, Gainesville, Miami). Dewey (1973) was one of the first researchers to describe the location of physicians within the context of retail trade establishments. He observed the increase in physicians locating in shopping centers, large shopping mall complexes and mid-size commercial centers. This locational point provided consumers with access to primary medical care just like any other retail good or service. In the same analysis, Dewey (1973) confirmed the pattern observed by Morrill et al., (1970) that physicians in the post-World War II period have been gradually abandoning inner-city locations adjacent to hospitals, and establishing practices in the suburbs. Physicians had been moving from inner-city neighborhoods that were undergoing ethnic and socioeconomic changes, to more affluent suburban areas. Busch and Dale (1978) also support this trend, noting that the American physician is moving to more prosperous areas with greater support facilities.

Rosenthal (1978), in a study similar to Dewey's work (1973), considered the locational pattern of physicians in the Miami, Fort Lauderdale and West Palm Beach Standard Metropolitan Statistical Areas (SMSAs) between 1950 and 1970. He concluded that not only was there a strong and positive correlation between physician location in the "sunbelt" and a general migratory flow to that region, but

that high-income and high-density population areas were the strongest attractors of physician practices.

Shannon et al., (1978) reviewed the locational pattern of physicians in Washington, D.C., a city where Blacks are the majority, to see if the ideas of De Vise (1971, 1973) were valid. They found that low-income Blacks overwhelmingly sought primary medical care in the emergency rooms and out-patient clinics of large hospitals. Somewhat unexpected, however, was the finding that about one-third of middle-income Blacks opted for hospital facilities in receiving primary medical care despite the fact that they had the out-of-pocket resources or health insurance coverage to resort to private practitioners. It was concluded that Blacks felt more comfortable when attended in the company of other Blacks, regardless of their income level. In other words, the rapidity of care among private physicians was often rejected because of a preference to be treated in settings (hospitals) with other Blacks. On the supply side of primary medical care, this same study (1978) noted that 25 percent of private general practitioners in Washington, D.C. were concentrated within one mile of three major hospitals; an uncommon pattern in North American cities.

The following points summarize the North American pattern of physician location: 1) physicians have been gradually leaving city centers, 2) physicians are increasingly locating in affluent suburban neighborhoods, 3)

when provided a choice, specialists prefer to locate near large teaching hospitals, and 4) shopping centers and shopping malls increasingly house more physicians, emphasizing that primary medical care is a mid-range economic service that is accessible by automobile travel.

Summary and Conclusion

This chapter described the spatial organization of primary care facilities in Santiago, Chile and analyzed this relative to patterns in Canada and the United States. The pattern of physician location in Canada, drawing heavily on the work by Rosenberg (1983) in Toronto, indicates a strong clustering pattern which was also evident in Santiago. Calculations made in this chapter indicate that private physicians in Santiago have become locationally more concentrated since 1950. This finding is at variance with trends in the U.S. since 1950 where the gradual suburbanization of the population has brought physicians out into the suburbs where they have access to support facilities and non-indigent clients. This research also provided initial insights into the role that the type of national medical system may have in affecting physician location. Although private medical practices are not large in either Chile or Canada, there is a tendency for these practices to be concentrated. The U. S. medical marketplace, on the other hand, appears to be dispersed by

market forces; physicians locate near high-income clientele in the suburbs as well as hospital complexes are increasingly being found outside of the city core. The pattern of less accessibility to primary medical care in Santiago in recently developed and low-income areas of the city, is similar to patterns found in New Zealand (Barnett and Newton, 1977) and Great Britain (Knox, 1978, 424). Although this chapter identified the strong and positive correlation between the location of private medical facilities and personal income, it must be noted that an ecological effect may be operating since most high income groups live relatively close to the metropolitan center. Thus the traditional Santiago urban core is still a strong retainer of physicians. Future research should explore this relationship between physician concentration in urban centers in other Latin American cities and how these spatial patterns vary by types of medical care financing.

Unlike the locational procedures used in the United States and Canada, public PMC facilities are not selected by electorate demand or by locational analysis techniques. Public health care facilities in contemporary Chile are derived by spontaneous demand, public demand and mayoral appeal.

Order-neighbor analyses revealed that S.N.S.S. facilities are not randomly distributed. This finding indicates that S.N.S.S. officials take into account some

spatial considerations in facility planning despite the absence of locational analyses in their planning programs. The first measure of accessibility generated an accessibility surface from 394 points to 54 S.N.S.S. primary care centers. A convex surface resulted, underscoring the sensitivity of the measure to centrally located points (Figure 15). Accessiblity declined evenly as distance from the center of the metropolitan area decreased. The measure was found to be of limited utility because attributes other distance to clinics were not incorporated and the high point of the accessibilty surface hovered over the center of the clinics. Moving to a more refined measure, a second clinic accessibility surface weighted clinics by the number of physician hours provided. The map indicated that the western, central and northern districts were well endowed (Figure 16). Upper-income neighborhoods in the northeast and low-income neighborhoods in the south had low indexes of accessibilty. The third and most sensitive measure of accessibility to public health clinics also weighted clinics by the number of physician hours worked, but included different distance-decay parameters, k, as well (Figure 17). Low-values of k (1.0 and 1.5) emphasize a general effect of clinic clustering or dispersion across the surface of the metropolis. High values of k highlight local conditions of relative accessibility. From a practical standpoint, higher values of k are perhaps a better index of accessibility

because they offer a local appraisal of clinic availability (in terms of distance of physician hours) which is of interest to the S.N.S.S. consumer. Health district managers and clinic directors would also be more interested in high values of k since they represent local conditions of accessiblity. Conversely, planners at the Ministry of Health would benefit most from low values of k (1.0. and 1.5) since a more regional effect is measured. Local district health planners would be able to use these measures to better evaluate intra- and inter-district variation in the utilization of S.N.S.S. services. Another application would be to generate interaction models based on utilization figures. Socioeconomic data on the location and number of indigents could be used to identify clinics that are surrounded by extremely poor neighborhoods. However, this would require more complete and centralized collection of data by local municipalities and the S.N.S.S.

The semi-public FONASA system was reviewed and the distribution of general practitioners and specialists affiliated with that system was discussed. GPs were concentrated in three clusters in the downtown area while specialists were concentrated in the affluent barrio alto section of northeastern neighborhoods. It was hypothesized that both GPs and specialists located near their clientele although for different reasons; the former sought downtown locations that are close to large numbers of white-collar

workers and the latter group drew upon high-income market from the barrio alto.

The location of private medical centers and physician offices exhibited a strong and positive relationship with monthly family income levels. Such a pattern is very much in line with the workings of the private medical market in the U.S. One difference, however, is that large suburban shopping centers are not a common feature in Chile (there was one large shopping mall in metropolitan Santiago in 1983, Parque Arauco). Thus Chilean physicians are not located where the consumer can conduct multi-purpose visits to large retail centers. Rather, private physicians are concentrated in aesthetically pleasing settings that are accessible by major transport arteries such as the Metro and Providencia Avenue. In these locations, there is no need for large parking facilities since bus transportation and rail are the major means of transportation in Santiago.

The 1983 pattern of private medical doctors in Santiago is similar to the pattern found in the immediate post-World War II period in the United States when the large shopping centers and shopping malls that characterized the U.S. landscape of the 1950s and 1960s were not common. However, it is not expected that a similar pattern of private physician locations will develop in Chile for two reasons

1. There is an absence of commercial property on the scale required to to accommodate large retail centers in northeastern Santiago; and,

2. It is unlikely that a large enough clientele will emerge in Chile to support this economic activity.

Three lines of contemporary geographic thought were considered at the outset of this chapter in order to more fully interpret the spatial pattern of PMC in Santiago. The neo-classical perspective is supported by the empirical observations presented. Private physicians are concentrated near their clientele and near support facilities. Work by Arze (1984) is carried out in the humanistic school, but such studies are generally lacking on Santiago. In light of similar concentration patterns of physicians in the metropolitan centers in Canada and Chile, it might be fruitful to pursue more behavioral or humanistic inquiries into the location of physicians. As Rosenberg comments

> In contrast to American research that shows physicians acting as entrepreneurs locating in higher income areas, (this) evidence adds weight to the belief that the basis for understanding the location of physicians in Canadian cities may be better understood using a behavioural approach (1983, 7).

A final perspective, that of the structuralist school of human geography, was also noted. A central line of thought here is that the state develops a PMC network to rectify the inevitable weaknesses of the marketplace. Accordingly, S.N.S.S. primary care could be viewed as one element of collective consumption that is provided in order to avoid a collapse in social relations. The state is also able to ensure a cheap and healthy pool of labor which is

necessary for capitalist production (Kirby, 1983, 22-26). This study did not find that the poor are strongly discriminated against by the distribution of public PHC facilities. Areas of underprovision were identified but not solely at the expense of poor areas of the city. More refined analysis is needed to address this question further. Sociologist Castells' assessment (1978) of state programs as a tool to mitigate social tensions that my escalate to revolutionary movements, seems particularly pertinent to the present Chilean experience. Support from low- and middle-income groups is crucial to the continuance of the Pinochet regime, and the provision of accessible medical care is one component of that support.

CHAPTER VI
SUMMARY AND CONCLUSION

This research has analyzed various aspects of accessibility to primary medical care in Chile and the findings have been compared with those from other nations. The broad approach taken tried to encompass the many dimensions of accessibility in assessing the ease by which primary medical care is obtained and the barriers that impede such care.

The restructured health care financial system described in Chapter II illustrates major differences between how the Chilean junta conceptualizes health care accessibility and availability, and those of previous and more welfare-oriented administrations. By reworking the nation's laws, private practitioners can work in FONASA (National Health Fund), ISAPREs (Provisional Health Institutes) and other private medical practices because of consumers' increased payroll deductions (cotizaciones) and more out-of-pocket payments. Thus the availability of providers has increased with no regard for the rather scarce purchasing power of the medical care consumer. A decrease of eight percent in the provision of S.N.S.S. (National Health Service System)care from 58 percent in 1977 to 50 percent in 1983, and the

privatization of some medical programs and fiscal retrenchment in the public medical sector, are only partial outcomes of health policies. In addition, the government's proposal to invest pension funds (AFPs) in the midst of a waning economy, and in the aftermath of a major setback of its monetarist policies, signals the avidity by which the present regime is willing to carry out its philosophy. The crucial matter, and one which this research has attempted to address, is the influence that these changes have had and will have on medical care consumers.

The materials reviewed in Chapter III show that the most formidable deterrent to care, namely financial costs, are affecting income groups differentially. FONASA consumers, the bulk of the middle-class medical market, have been the most adversely affected. FONASA's three levels of care illustrate a hierarchical availability of providers, with a larger number of them in the most expensive levels. In terms of relative accessibility, it was noted that medical vouchers experienced the second greatest increase within the Consumer Price Index during the third quarter of 1983. Regardless of income level, the Chilean Medical Consumer Price Index indicated a decline by about one-fifth in medical care purchasing power between 1978 and 1983. Once again, middle-income groups have borne the brunt of this increase because blue-collar workers continue to receive free care while the proportion of medical costs

incurred by users of ISAPREs and other private systems has diminished. This was especially apparent in the increase in monthly withholdings for medical care (cotizaciones) from four percent to six percent within two years, and during a time when real wages were falling.

Among the various private and public medical systems, the largest, the National Health Service System, appears to have been the least effected by the current regime except for a decline in the proportion of users and an increase in the physician-to-population ratio. The contribution of worker and indigent payments toward the total revenues of that system has not exceeded ten percent. The proportion of revenues earned by the sale of medications is much greater than under the Allende government, but similar to the early years of the Frei administration and the Alesandri government. As is often the case in large national public systems throughout the world, the major costs incurred by these consumers is measured by their long waiting time.

Cultural and organizational barriers to health care were few as revealed in the study of 140 users of a S.N.S.S. facility in southeastern Santiago. Some conflict seemed to exist between auxiliary personnel and consumers but it was absent in the patient-doctor relationship. It is likely that the tensions between staff and patients and the lengthy wait at this clinic have been common features of the system since its inception in 1952. The quality of care delivered

by physicians was found to be slightly higher than the measures taken from other studies in Chile and generally point to a high degree of satisfaction among this facility's users. The surveyed women and clinic users from female-headed households showed no significant differences in the frequency of utilization of the S.N.S.S. facility nor in their evaluation of the care they obtained. In light of the absence of affordable child-care facilities, women depended upon informal social networks to look after children or else children accompany women to the clinic. In an international context, the surveyed Chilean women experienced fewer hindrances to primary medical care care than many of their Latin American counterparts. Regardless of gender, users said that physicians touching them during the examination was a major determinant of their judgement of quality of care. Because it is unlikely that a medical examination is carried out without some physical contact between provider and patient, this reference suggests a general attitude of concern on part of the provider. In turn, patients perceived that they were being accepted and competently treated by physicians regardless of class differences.

Patients interviewed held a strong conviction that their health care was a basic civil right. This was the main reason for coming to the clinic where they were treated, surpassing even geographic proximity. Although in the majority of the cases they were legally entitled to care

because of their indigence, their sense of correspondence with the S.N.S.S. went beyond a mere geographic assignment to a particular facility. This finding along with patients' preference for public care (even if they had they money to purchase private primary medical care in the marketplace) has a significant policy implication. It reveals a deeply entrenched conviction that medical care coverage is a benefit inherent in their status as citizens, and it implies that possibly one-half of all Chileans will find unacceptable further modifications to the S.N.S.S. delivery system. is reached. This hypothetical point where medical services are too greatly cut back, may be the moment when the dwindling support of the current regime subsides markedly. In this instance, the purpose of the state as a guarantor of a healthy labor force will no longer exist, and its control over the proletariat could be dramatically challenged (Castells, 1978).

Geographic accessibility to primary medical care was addressed by both the Villa O'Higgins survey and a study of the spatial organization of PMC facilities in Greater Santiago. The distribution of 54 S.N.S.S. clinics did not favor high or middle income districts of the city. Clinics have been set up amidst neighborhood clusters that afford users with low travel times. In the Villa O'Higgins survey, the median travel time was nine minutes and the average was about 14 minutes. Eighty-five percent of the users

interviewed made the trip by foot, in part because of proximity (the mean home-to-clinic vector distance was .7 kilometers), and in part because they lacked bus fare. The costs of travel in terms of time and money indicate the degree of propinquity between clinic and users. The results obtained at Villa O'Higgins are not expected to vary widely from metropolitan averages.

Several indexes of accessibility to S.N.S.S. facilities were then examined. Various surface maps were generated according to distance-decay parameters and a service measure of medical hours. Not unexpectedly, these analyses indicated both areas of relative under- and over-provision of clinic accessibility. Unlike Canadian and U.S. primary care delivery systems, high-income areas in Chile are not particularly favored by the public system. Low-income areas in Santiago experienced conflicting patterns of accessibility. On the one hand, western Santiago municipalities, for example, inhabitated by a large portion of the urban poor, faired relatively well. On the other hand, southern municipalities exhibited low degrees of accessibility. This latter area is comprised of the municipalities of La Florida, La Granja and La Cisterna and contains much of the low-income settlements (both legal and illegal) of Metropolitan Santiago. Moreover, it is one of the few areas in urban Chile where squatters have settled during the rule of the current regime. Its recent and fast

growth may account for the relative under-provision of services. An extension of S.N.S.S. operating hours into the late afternoon and early evening, implemented in 1984, could alter the 1983 accessibility patterns described in this study.

In the private medical sector, a strong and positive relationship was detected between the number of private ambulatory and hospital facilities and mean family income. The locational patterns of general practitioners and specialists in Chile were compared to those of Canada and the United States. It was found that Chilean GPs were less dispersed and clustered in the downtown area where white-collar employees work. Unlike their North American counterparts, the absence of more than a few large-scale shopping facilities in the suburbs and less reliance on automobile travel than on public transportation in Chile, accounts for this deviation. More significant, however, was the finding that unlike the U. S. where the medical market has acted as an agent of dispersal, private physicians have become more locationally concentrated in Santiago. This observation reveals a similarity to the Rosenberg study (1983) on physician location in Toronto. The analogy of the Chilean and Canadian cases underscores the influence that a more "socialized" medical system has in producing less dispersion among physician surgeries as compared to free market settings. Coefficients of localization from 1950 and

1980 showed that physicians have become locationally more concentrated in recent times. This suggests that the medical market has, in fact, not acted as an agent of dispersion. Both the historical trend of private physician concentration and the 1983 pattern of FONASA physician and private medical center locations will provide good indications of the changing urban and medical geography of Santiago as privatization progresses.

At the outset, this research briefly identified an ideological shift apparent among western capitalist nations. This ideology hinges on the notion of less government participation in the provision of social services and a concomitant reduction of the public tax burden. It is the author's contention that such fiscal retrenchment, through a variety of mechanisms, has been present in Chile under the current regime. While this may be acceptable in countries with more equitable income distributions, it is unprecedented in a country with the income disparities of Chile. The traditional medical care system devoted to the general public good is being substituted by a new one that increasingly treats medical care as a private commodity. Evidence indicates that there were inadequacies in the traditional medical system in Chile and that reform may have been a measure to correct such inadequacies. Only medical care consumers and the Chilean electorate will be able to evaluate for themselves the quality of medical care

accessiblity in the near future, once its effects on the quality of life and the financial rescurces of consumers are assessed.

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APPENDIX A
SPANISH-LANGUAGE QUESTIONNAIRE

Encuesta de Salud

H___ M___ Niño___ Dir._____ Edad _____

___cuadra (1) ¿A cuántas cuadras del consultorio vive Ud?

__c__l (2) ¿Es cerca o lejos?

___minut. (3) ¿Cuánto se demoró al llegar al consultorio?

bus__pie__taxi__ (4) ¿Cómo llegó al consultorio?

part.__otro__

fácil__difícil___ (5) ¿Es fácil para Ud. conseguir atención?

hace _____horas (6) ¿A qué hora tuvo que llegar para conseguir atención?

hace _____días (7) ¿Cuándo se enfermó?

a__b__c__d__e__f__ (8) Si se enfermó antes, ¿por qué no vino antes?

otro_____ a)prob. de trab. b)nadie para cuidar a los niños
c)enferm. se empeoró d)vino antes pero no le atend.
e)probó remedios caseros f)probó rem. de la farm.

(9) ¿Qué dificultades le puso el consult. para conseguir atención médica?

a__b__c__d__ a)trámites con asis. social b)cert. de residencia
otro _____ c)certif. de previsión d)pago/cobro e)otro

Sí__ No__ (10) Siempre que se enferma, ¿viene al consultorio? ¿Por qué?

Por qué?_____

Sí__ no__ (11) ¿Ha ido alguna vez a un médico particular?

Por qué_____

(12) ¿Prefiere ir a un médico particular?

Sí___ no___

Por qué?_____

Constitución Familiar

MIEMBRO ♀ ♂ niño adulto	EDAD	OCUPACION: Estudia — no JARD.	COLEGIO	UNIV.	Trabaja — POLH	PEM	OTRO	CESANTE	INGRESO

Appendix A (continued)

Sí__ No__ (13) Así qué si tuviese más dinero, ¿preferiría ir a un médico particular? ¿Por qué?
PQ _____

_____pesos (14) ¿Cuánto gana la familia al mes?
_____pesos ___ (15) ¿Cuánto dispone para la olla al mes?

(16) ¿Quién queda cuidando a los hijos cuando viene?
a__b__c__d__e__ a)vecinos b)ellos solos c)esposo(a) d,otro pariente e) no aplicable

_____ (17) ¿Qué le desagrada más de este consultorio?

_____ (18) ¿Qué le agrada más de este consultorio?

Sí__ No__ (19) ¿Cambian mucho los doctores y las enfermeras aquí?

_____veces (20) ¿Cuántas veces ha cambiado de consultorio en los ultimos cinco años?

Sí__ No__ (21) ¿Se puede atender con el médico que Ud. quiere que le atienda?

Sí__ No__ (22) ¿Le gustaría que el méd. que Ud. prefiere le atienda

_____horas (23) ¿Cuánto tiempo tuvo que esperar hasta lo atendieran?

mb__b__reg.__m__mm (24) ¿Diría Ud. que la atención médica fue...?

_____ (25) ¿Por qué fue la atención así?

Sí__ No__aquí__ (26) ¿Le recetaron remedios? ¿Dónde piensa obtenerlos?
otro_____
(27) ¿Le pidieron examenes? ¿Dónde piensa hacerselos?
Sí__ No__aquí__
otro_____

_____veces (28) ¿Cuántas veces ha venido Ud. a este consultorio en el año?

con__méd.par.__ (29) ¿Ha recebido Ud. otro tipo de atención en alguno de los siguientes lugares....?
posta de urg.__
hospital_____

No__Cual(es)_____ (30) ¿He sido Ud. tratado en los ultimos 2 años por alguna enfermedad grave? Cual(es)?
_____

Ud. mismo/a___ (31) ¿Ha usado Ud. otros remedios recetados por Ud. mismo/a o vecinos? Cuales?
vecinos___ Cuales? hierbas: _____ de la farmacia: _____
_____ _____

_____ (32) ¿Qué mejoras sugeriría Ud. para hacer este consultorio más efectivo?
_____
_____

APPENDIX B
GLOSSARY OF SPANISH WORDS AND ACRONYMS

AFP	Administradoras de Fondos de Pensión (Pension Fund Administrators). Since 1981 these pension fund schemes have been funded by monthly wage deductions and can be selected by Chileans as both a retirement and health care fund. Unused funds accrue interest. In 1984 there was speculation that the state would place these monies in capital-generating investment plans even though depositors would be insured against any loss.
barrio alto	Upper-income neighborhoods located in parts of the municipalities of Providencia and Las Condes in northeastern Metropolitan Santiago.

bono	A medical voucher issued by FONASA. Several vouchers are usually required for the delivery of therapeutic and curative care. Three price levels of vouchers existed under FONASA in 1983. Vouchers were also used under SERMENA.
consultorios	Public health clinics administered by the S.N.S.S. or local municipalities. These primary care facilities are staffed by physicians and are located in urban centers throughout Chile. Each consultorio is affiliated with a hospital. There were 64 S.N.S.S. clinics in Metropolitan Santiago in 1983.
cotizacion	Monthly wage and salary withholdings taken by the employer and placed in a public or private medical care system of the users' choice.
centro medico	Private medical centers, usually with both ambulatory and in-patient care; the latter usually have fewer than 50 beds.

Colegio Medico	The Chilean Medical Society. It is the largest professional organization of physicians in the country. Until 1979, membership was obligatory for all practicing physicians but since then affiliation has been on a voluntary basis.
empleado	A middle-income white-collar worker whose major source of medical care is usually FONASA.
FONASA	The National Health Fund. Formerly called SERMENA until 1980. FONASA provides three levels of care that are differentiated by the cost of medical vouchers (bonos). It provides comprehensive medical care to public and private middle-income workers. Under administrative reorganization in 1980, FONASA now administers are health care funds from the state that are directed to the Ministry of Health and the S.N.S.S.

ISAPREs	Provisional Health Institutes. A form of pre-paid private medical care modeled after the Health Maintenance Organizations (HMOs) of the U.S. ISAPREs were introduced in 1981 although fewer and somewhat similar versions existed in Chile under the name "cajas."
Junta de Vecinos	Neighborhood Boards. A voluntary organization that monitors community issues and needs. Requests for health clinics, police and fire protection and other public services are passed on from these organizations to the municipal authorities who then forward the requests to the national ministerial levels of government. In 1983 there were about 1,000 of these organizations in Metropolitan Santiago.
SERMENA	National Employees Medical Service. Begun in 1938 to provide primary, secondary and tertiary care to certain public workers, in 1968 non-governmental workers were permitted to enroll. As the

predecessor of FONASA until 1980, it operated with medical care vouchers at two levels of care.

SNS — National Health System. Created in 1952 as a central public agency to coordinate a number of public and private medical care systems, in the late 1970s it was transformed into the National Health Service System (S.N.S.S.). Both the SNS and SNSS have traditionally serviced blue-collar workers (obreros) and the medically indigent.

SNSS — National Health Service System. As the legal successor of SNS, in 1983 just over one-half of medical encounters in Chile were delivered by SNSS personnel. Care is provided mainly to blue-collar workers (obreros) and the medically indigent. It is the largest medical network in the country and operates a hierarchy of services ranging from rural health stations (postas rurales) and urban clinics (consultorios) to hospitals.

BIOGRAPHICAL SKETCH

Joseph L. Scarpaci, Jr. was born in 1955 in Pittsburgh where he spent the first 17 years of his life. While an undergraduate geography major at Rutgers University, he spent six months studying and working on a land tenure project in highland Guatemala. After receiving his baccalaureate degree from Rutgers in 1976 he went on to earn a Master of Science degree in geography at The Pennsylvania State University. He was an instructor of geography with the Departments of Natural and Social Sciences at the Universidad Interamericana de Puerto Rico at Bayamon from 1978 until 1980. Since 1980 he has been a resident of Gainesville, Florida where he has worked as a doctoral candidate in the Department of Geography and an instructor of geography and Spanish at the University of Florida. In September 1985 he returns to Rutgers University as an Assistant Professor in the Department of Urban Studies.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of schclarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctcr of Philoscphy.

Cesar N. Caviedes, Chairman
Professor of Geography

I certify that I have read this study and that in my opinion it conforms to acceptable standards of schclarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctcr of Philoscphy.

Stephen M. Gclant
Professor of Geography

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August 1985

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